BEKO

COLOUR TELEVISIONS

Servis
Manual
AT-4

SAFETY INSTRUCTIONS

SAFETY - PRECAUTIONS

WARNING: The following precautions should be observed.

1. Although the chassis is isolated from the mains supply, some areas of the main PCB are at mains potential. An isolation transformer (250-500 VA) should therefore be connected between the mains and the receiver before service is attempted.

2. Do not install, remove, or handle the picture tube in any manner unless safety, goggles are worn. People not equipped should be kept away while picture tubes are handled Keep the picture tube away from the body while handling.

3. When replacing chasis in the cabinet, ensure all the protective devices are put back in place, such as: barriers, non-metallic knobs, adjustments and compartment cover or shields, isolation resistor-capacitor, etc.

4. When service is required note the original lead locations and anchor points. Ensure all leads, especially in areas of high voltage, are routed/anchored in their correct locations when reassembling the receiver.

5. Always use the manufacturer's replacement component. Always replace original spacers and maintain lead lengths. Especially critical components which should not be replaced by other makers. Furthermore where a short circuit has occurred, replace those components that indicate evidence of overheating.

6. Before returning a serviced receiver to the customer, the service technician must throughly test the unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the instrument by the manufacturer has become defective, or inadvertently damaged during servicing. Therefore, the following checks are recommended for the continued protection of customers and service technicians.

INSULATION

Insulation resistance should not be less than 10M at 500V DC between the mains poles and any accessible metal parts.

Also, no flashover or breakdown should occur during the dielectric strength test applying 3kV AC or 4.25kV DC for two seconds between the main poles and accessible metal parts.

HIGH VOLTAGE

High voltage should always be kept at rated value of the chassis and not higher. Operating at higher voltage may cause a failure of the picture tube or high voltage supply and also, under certain circumstances could produce x-ray radiation moderately in excess of design levels. The high voltage must not, under any circumstances exceed 26kV on the chassis.

X-RAY RADIATION

TUBES: The primary source of x-ray radiation in this receiver is the picture tube. The tube utilised for the above mentioned function in this chassis is specially constructed to limit x-ray radiation for continued x-ray radiation protection, replace tube with the same type as the original BEKO approved type.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in BEKO television receivers have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified by marking with a ⚠ on the schematics and replacement parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the BEKO recommended replacement one, shown in the parts list, may create electrical shock, fire, Xray-radiation, or other hazards.

TUBE DISCHARGE

The line output stage can develop voltages in excess of 25kV; if the E.H.T. cap is required to be removed, discharge the anode cap to chassis via a high value resistor, prior to its removal from the tube.

TECHNICAL SPECIFICATIONS

1. OPERATING CONDITIONS

1.1	POWER SUPPLY	140 TO 265 VAC
1.2	NOMINAL OPERATING VOLTAGE	220 VAC
1.3	TEMPERATURE RANGE	0 TO 45 DEGREES C
1.4	HUMIDITY RANGE	YEAR'S MEAN = 75% MAX= 95%

2. RF SECTION

2.1 RECEIVING CHANNELS FOR VHF/UHF BAND

	CCIR B/G	UK I	FRANCE L	OIRT D/K
VHF BAND				
	BAND I	CHANNEL2-4	CHANNEL 1-5	CH 2-4 CH 1-5
BAND III	CHANNEL 5-12	CHANNEL 6-12	CH 5-12	CH6-12
CABLECH	S1-S19,S20-S41	S1-S19,S20-S41	S1-S16, S21-S41	S1-S19-S22-S341
UHF BAND				
BAND IV-V	CHANNEL 21-69	CHANNEL 21-69	CH 21-69	CH 21-63

		MIN	NOM	MAX	UNIT
2.2	GAIN LIMITED SENSITIVITY INPUT SIGNAL LEVEL FOR STANDARD VIDEO OUTPUT VOLTAGE				
	BAND 1/3	–	20	–	dB µV
	BAND 4/5	–	23	–	dB µV
2.3	NOISE LIMITED SENSITIVITY INPUT SIGNAL LEVEL FOR 30 dB (S+N)/N-RATIO, WEIGHTED, CCIR REC 567				
	BAND 1/3/4/5	–	30	–	dB (µV)
2.4	SELECTIVITY HF+IF				
2.4.1	IF FREQUENCIES				

	B/G	I	L	D/M
Picture Carrier	38.9	38.,9	38,9	38,9
Sound Carrier	33.4	32,9	32,4	32,4
Colour Carrier	34,47	34,47	34.47	34.47

		MIN	NOM	MAX	UNIT
2.5	VOLTAGE STANDING WAVE RATIO				
	BAND 1/3	–	2	4	–
	BAND 4/ 5	–	2	4	–
2.6	MAXIMUM INPUT SIGNAL LEVEL				
	BAND 1/3	100 dB µV (MAX)			
	BAND 4/	100 dB µV (MAX)			

3. VIDEO OUTPUT SECTION

		MIN	NOM	MAX	UNIT
3.1	VIDEO OUTPUT VOLTAGE (measured on cathode with lowest output level, contrast control and drive control at max.	90	100	–	V
3.2.	FREQUENCY RESPONSE				
a)	INPUT AERIAL STANDARD, HF SIGNAL				
	STANDARD B/G - D/K-I-L	–10	–7	–	dB
b)	INPUT: SCART PIN 20				
	STANDARD B/G - D/K-I-L		–8	–6	dB

4. CHROMA SECTION

4.1	PAL/SECAM				
4.1.1	COLOUR CAPTURE RANGE	+–300	+–500	–	HZ
4.1.2	PHASE ERROR OF REFERENCE CARRIER	–	+–5	10	DEGRESS
4.1.3	COLOUR KILLER	30			dB µV (NOMINAL)

5. SOUND SECTION

		MIN	NOM	MAX	UNIT
5.1	SCART OUTPUT				
5.1.1	S/N RATIO	40	45	–	dB
5.1.2	NOISE LIMITED SENSITIVITY	38 db/V (NOMINAL)			
5.1.3	AM SUPRESSION RATIO AM MODULATION=39%	60 db (NOMINAL)			
5.1.4	HARMONIC DISTORTION fm= 1 KHz	10%			
5.2	POWER OUTPUT (at 10% distortion) fm= 1KHz	4.0 Rms			

6. SYNCHRONISATION

6.1	LINE FREQUENCY LOCKING RANGE	:	+- 300 HZ
6.2	VERTICAL FREQUENCY LOCKING RANGE	:	+- 5HZ

7. PICTURE TUBE DRIVE SECTION

			20" / 21"	14" / 15"
7.1	B+SUPPLY VOLTAGE (AT Ib=0)	:	125+- 1 VDC	--
7.2	EHT	:	25.0 +- 0.5 KV	23.0-0.5 KV
7.3	FOCUS VOLTAGE	:	MIN 25.6% MAX 38%	--
7.4	GRID 2 VOLTAGE RANGE	:	MIN 300 V MAX 1350 V	--
7.5	HEATER VOLTAGE	:	6.2+- 0.2 Vms	--
7.6	FRAME OUTPUT VOLTAGE	:	250+- 8 Vpp	--

Power Supply Voltages

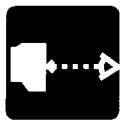
7.7	200V OUTPUT	:	200+- 5VDC	--
7.8	12V OUTPUT	:	12.0+- 0.5 VDC	--
7.9	17.5V OUTPUT	:	17.5+- 0.5 VDC	--
7.10	21V OUTPUT	:		--
7.11	5V OUTPUT	:	5.0+- 0.5 VDC	--
7.12	RETRACE TIME	:	11.0+- 0.5 VDC	--
7.12	8V OUTPUT	:	8.0 to SVDC	

8. OTHERS

8.1	AMBIENT OPERATING TEMPERATURE	:	0-45 DEGREES C
8.2	STORAGE TEMPERATURE	:	-10 TO + 85 DEGREES C
8.3	POWER CONSUMPTION	:	90 Watts (max) 14", 15", 20", 21"
8.4	SAFETY	:	IEC 65 /BS P2N
8.5	X-RAY RADIATION	:	ACC. IEC 65 /BS P2N
8.6	Picture Tube Dimensions	:	14" (37 cm), 15" (40 cm) 20" (51 cm), 21" (55 cm)

Components and specification are subject to change for improvement.

1. SECTION: INSTALLATION AND PRECAUTIONS



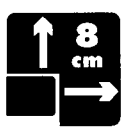
Place the television so that direct light does not fall on the screen. Excessive light will cause a washed out effect.

Do not place the television near heat sources such as radiators, ovens, stoves, etc. Do not use the television near any apparatus that produces a magnetic field such as Hi –Fi speakers or electric motors, otherwise colour purity may be affected.

The heat built up in the set escapes through ventilation holes; so do not cover the set by drapes, clothes, etc, that may block air circulation and do not place the television on carpet or soft furnishings.

Do not place a vase or flower pot on the television top.

It is possible to clean the TV screen using a slightly damp cloth or chamois leather. Never use abrasive cleaning agents, and always remove the mains plug from the socket outlet while cleaning.



If you wish to place the television on a shelf or in a wall unit, always ensure there is a minimum air gap of 8 cm around the top, sides, and rear of the television, to assist ventilation.

Your TV set is designed to operate with mains voltages140-270V; 50Hz or 60Hz.
Do not connect your TV set to power sources other than the mains supply.

SPECIAL FEATURES

Your TV set is equipped with an **"On-Screen Display"** system. This enables the user to see the functions of the TV on-screen and to control them efficiently.

This television will automatically switch to **"Stand-by"** five minutes after a channel ceases to transmit.

Digital Electronic Tuning: This television has been fitted with a combined VHF/UHF (including cable channels S1-S41) tuner with PLL to ensure the channel settings are as simple as possible.

Scart Socket: Video casette recorder, satellite receiver, video disc player, TV games or a home computer can be connected to this AV (Audio/Video) socket with an appropriate connecting cable. To view this input, select AV on the remote handset.

50/100 Programme Memory

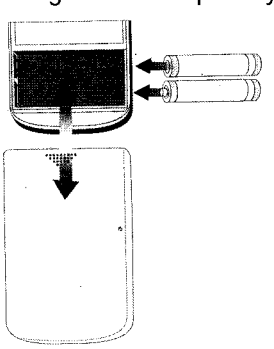
Child lock function enables locking out of unwanted programmes and protection of the tuning procedure.

3. PREPARATIONS

CONNECTIONS

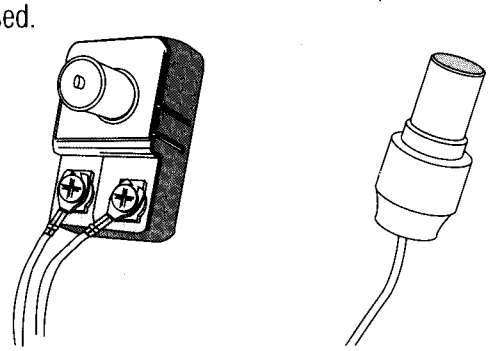
Battery Change/Installation

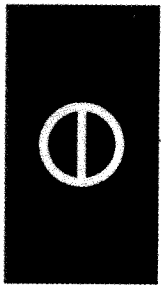
Remove slide cover by pulling it down in the direction of the arrow. Install the two AA size batteries observing the correct polarity and refit the cover.



AERIAL CONNECTION

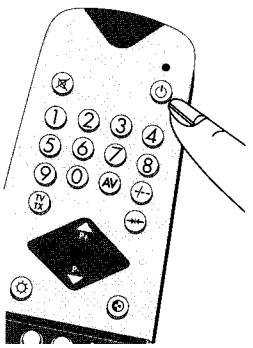
Using a 75 W aerial lead connect your TV to the aerial outlet in your home. If a 300 W flat two wire lead is used, a 300 W /75 W adaptor should be used.





Connect the TV mains plug into your domestic mains socket outlet (240V 50Hz AC .)
To switch on press the TV on/off switch.

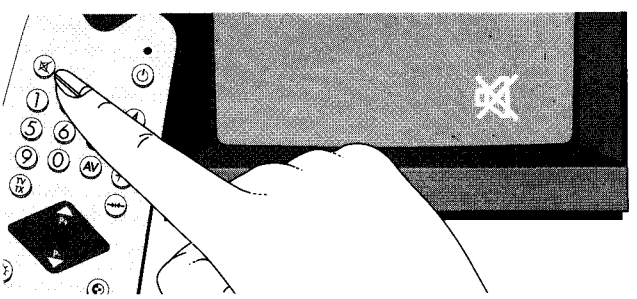
4. OPERATING YOUR TV



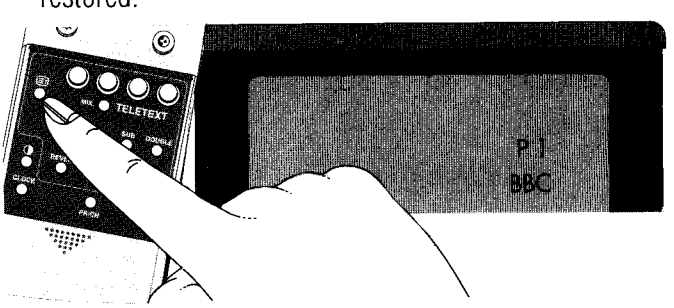
STAND-BY

When pushing the red stand-by button on the upper left side of the RC handset, your TV will go into the stand-by position.

Attention: If your television will not be operated for a long period, switch off your TV at the power switch.

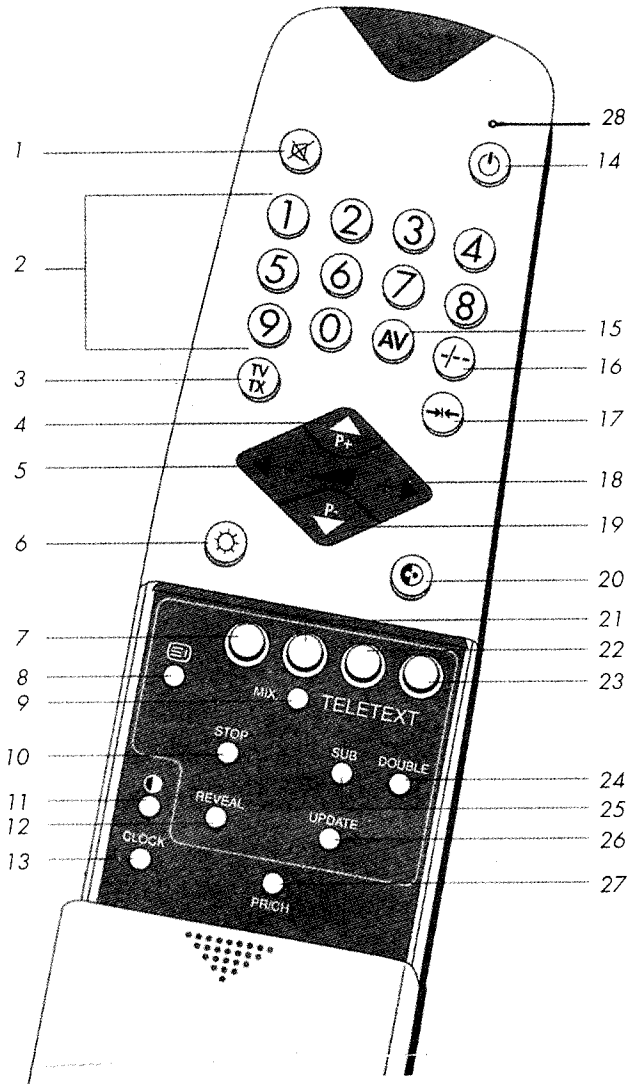


Mute: To temporarily mute the sound press the " 🔇 " button. The " 🔇 " sign will appear on the screen and the sound will mute. By pushing +, - or " 🔇 " buttons the sound will be restored.



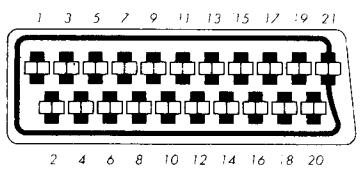
Display Button " ⊟ " : By pressing this button the programme number and programme name (if preset) will appear in the upper right corner of the screen. After a short while this will disappear automatically.

Remote Control Handset



1. MUTE button
2. Ten Key Programme buttons
3. Teletext/TV Selection button
4. Programme Up button
5. Volume Decrease button
6. Brightness control
7. Red Fastext button
8. Index Page/Info button
9. Mix button
10. Stop button
11. Contrast control
12. Reveal button
13. Clock button
14. Stand–by button
15. AV button
16. Two digit programme button
17. Memory/Normalisation button
18. Volume increase button
19. Programme Down button
20. Colour control
21. Green Fastext button/CHILD LOCK
22. Yellow Fastext button
23. Blue Fastext button /OFF Timer
24. Enlarge button
25. Subpage button
26. Update button
27. PR/CH –Menu button
28. LED Display

Assignment Of Connections For Scart Socket

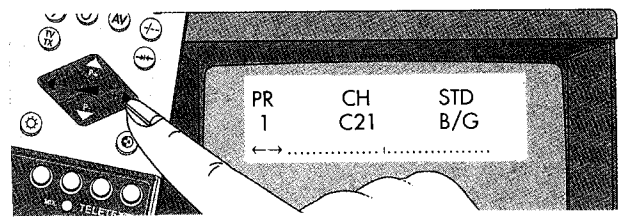


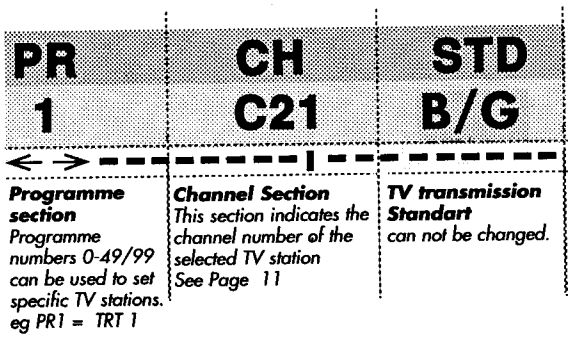
1- Audio output Right
2- Audio input right
3- Audio output Left (Mono)
4- Audio ground
5- Blue ground
6- Audio input Left (Mono)
7- RGB input, Blue
8- Switching voltage
9- Green ground
10-
11- RGB input, Green
12-
13- Red ground
14- Ground
15- RGB input, Red
16- Blanking Signal
17- Video output ground
18- Video input ground
19- Video output
20- Video input
21- Screening

TUNING AND MEMORY

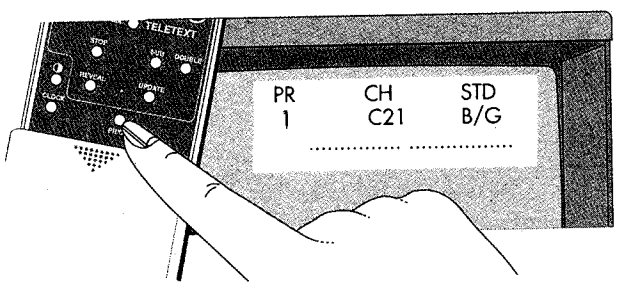
Menu

This TV has an advanced menu tuning system, Press the PR/CH-MENU button to display on the screen.

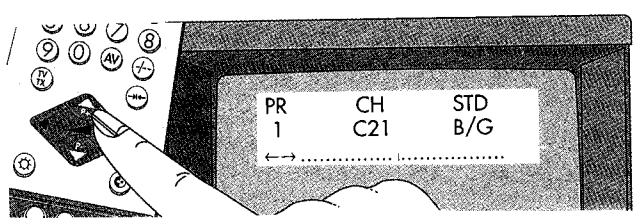




Use + and – buttons to shift position to the left and right. The chosen character will flash. Use P+/P–buttons to bring values to your chosen position.



When this MENU appears on your screen the number below PR will start to flash. See Programme Number Selection.



Programme Number Selection

Press PR/CH-Menu button. The number below PR will then flash. This is the TV programme number to be set. For example BBC1=PR1, ITV = PR3. The PR Number can be changed using the P+/P buttons.

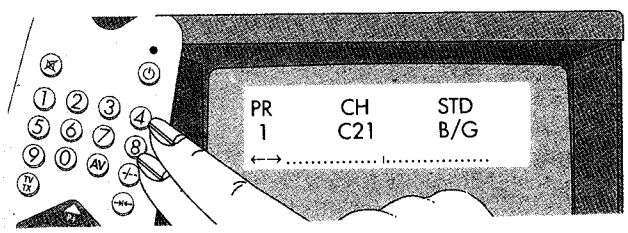
The programme number can be chosen by pressing one of the programme buttons. If the desired programme number has two digits, first press "-/- " button and then the two digits of the desired programme.

Tuning of Programmes with unknown channel numbers

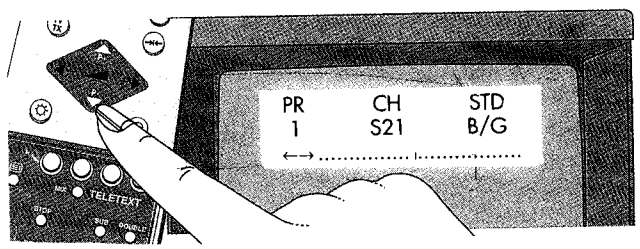
Using the -/+ buttons move the flashing cursor across to the two digit number immediately after letter 'C'. By push ing either the P+ or P-buttons the TV will automatically tune up or down to the nenext channel. If this channel is not the required one continue searching until the required channel is found. When the desired channel is found press the " →|← " button .

Tuning of Programmes with known channel numbers

Manual tuning is done in the same way as search

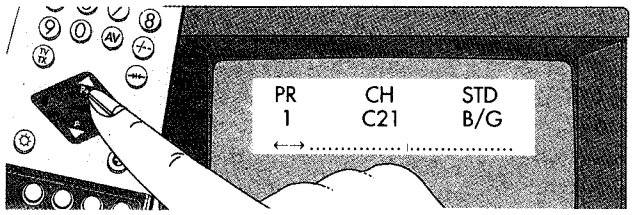


tuning, however when setting the two digit channel number for each programme the known channel number can be entered using the number key pad on the remote control handset. **To store the selected channel press " →|← " button.**



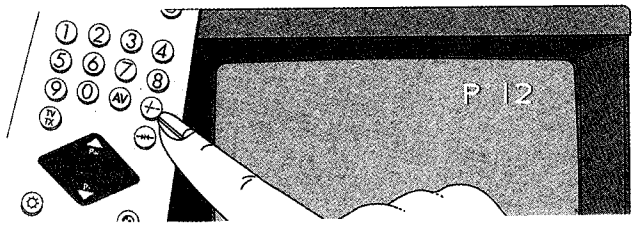
Tuning of Cable Channels

Using -/+ buttons move the flashing cursor to letter C. Push P+ or P– button. Display below CH will turn to S - -. Using + button move the flashing cursor to the two digit section after the lefter S. Enter the channel number of your desired cable channel. To store this channel press " →|← " button. The menu will disappear and the selected channel will be stored.



Fine Tuning

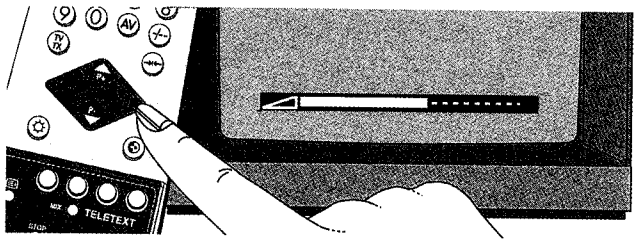
It may now be necessary to fine tune your TV to optimise reception. First press the PR/CH-MENU button on the remote control handset, move the flashing cursor down by pressing " – " button to the FINE TUNING line, then using "P+/P–" buttons on the remote control an optimum setting should be found. To store this setting press " →|← ".



Programme Recall

You can recall any programme by pressing the programme buttons. When the desired programme number has two digits first press "-/- -" button and then the two digits of the programme number.

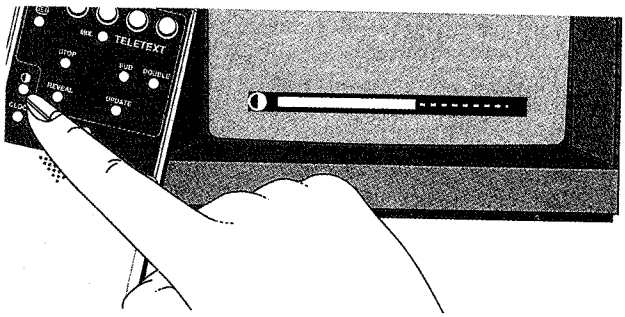
Volume and Picture Presets



Volume Adjustment

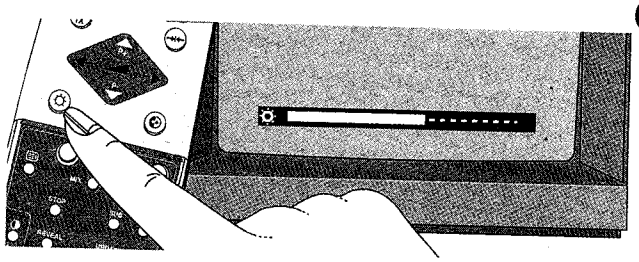
"+" button increases, "—" button decreases the volume level which can be seen on the screen.

Press PR/CH button, then " →|← " button to store your desired settings.



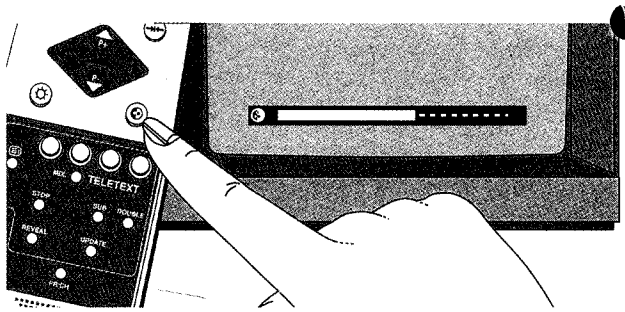
Contrast Adjustment

Press contrast button. The contrast display will appear on the screen. Press "+" or "—" buttons to increase or decrease contrast to the desired level.



Brightness Adjustment

Press the brightness button. The brightness display will appear on the screen, "+" or "—" buttons will increase or decrease brightness.

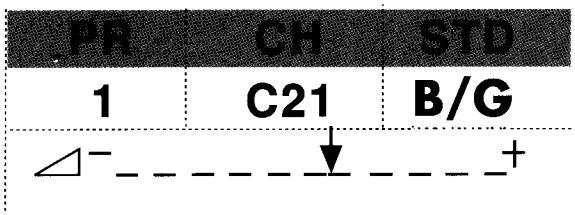


Colour Adjustment

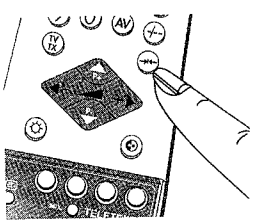
Press the colour button. The colour display will appear on the screen, "+" or "—" buttons will increase or decrease the colour to your required level.

Individual Volume Adjustment

This TV has 2 different volume control systems. One is individual for every programme and the other one affects all programmes.

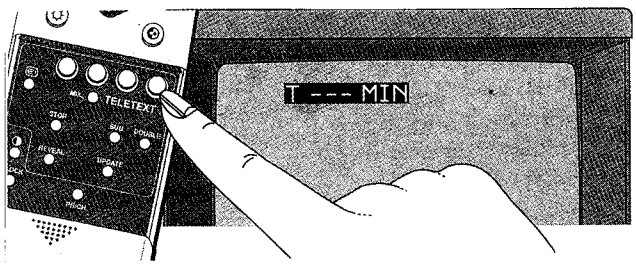


Press PR/CH-MENU button, the MENU will appear. Press the " –" button twice. Individual volume menu at the bottom of the main menu will start flashing. Adjust individual volume level using P+/P- buttons. This volume level is individual for each programme and can be stored by pressing " →|← "button. Individual volume level can be adjusted for AV mode as well by fallowing the same procedure.



Normalisation

Pressing this button when the tuning menu is not on screen restores the picture and sound to your pre-set levels after any changes.



Sleep Timer

The TV set can be switched off in steps of 30, 60, 90 or 120 minutes. Press the blue framed button to select Sleep timer mode.

Press the same button to select desired off time. Then press " →|←"; the on screen display will then disappear. When this time has elapsed the set will switch to stand-by.

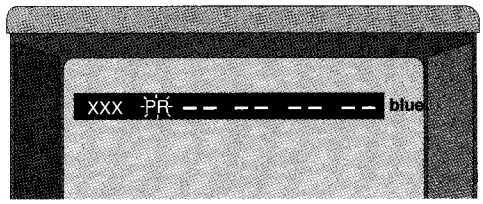
Child Lock

In this mode you can lock either
a) The programming procedure or
b) Four programmes and the programming procedure or
c)All 50/100 programmes and the programming procedure

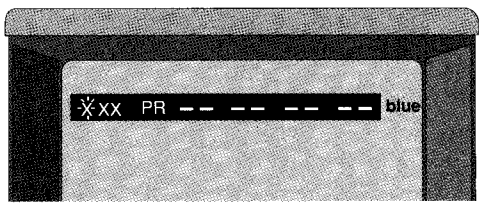
Child Lock can be unlocked temporarily or cancelled completely as explained in this section:

a) Locking of Programming Procedure

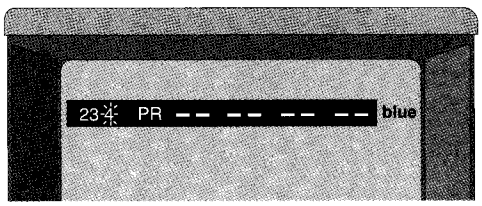
Press the green framed button twice.



The above display appears.
Press "-" button. The display will be:



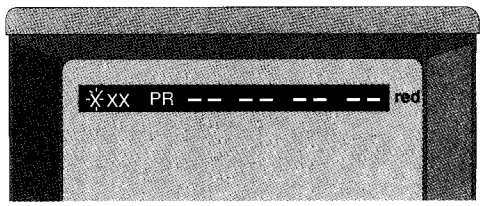
Now enter a 3 digit password of your choice. The display will be:



Press the " →|← " button. Programming and reprogramming is now locked. If you press PR/CH-MENU button the tuning menu will not appear. However, you can watch all channels already programmed .

Temporary Unlocking of programming procedure

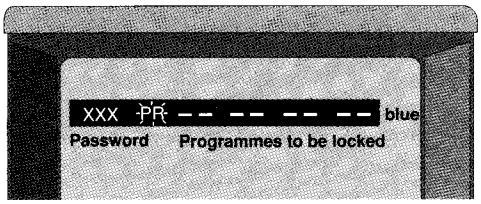
Press the green framed button twice. The display will be:



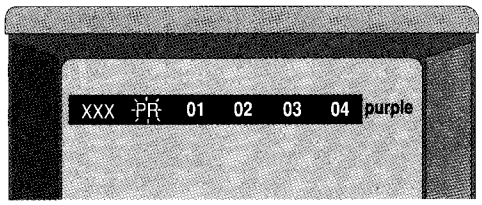
Enter your three digit password. The display will disappear and programming/reprogramming can be used. The programming procedure will be locked automatically, if you switch your TV set OFF and ON again.

b) Locking of 4 programmes

Press the green framed button twice to select child lock.

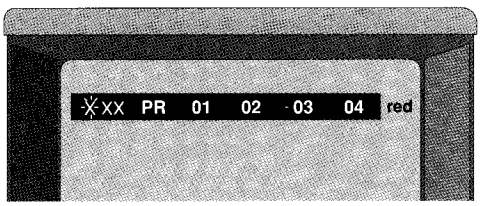


The above display will appear. Press the "+" button on your R/C Handset. The first – –will flash. Choose the first programme to be locked by using the "P+" and "P–" buttons. Press the "+ " button. The second – – will flash. Choose the second programme to be locked by using the "P+" and "P–" buttons. Repeat this procedure for all four programmes to be locked and press the "+" button. The first digit of the password section will flash. Enter your 3 digit password.



Press the "→|←" button.The Child lock display disappears and 4 programmes are locked. These programmes can not be watched and programming is not possible until the unlocking procedure is used.

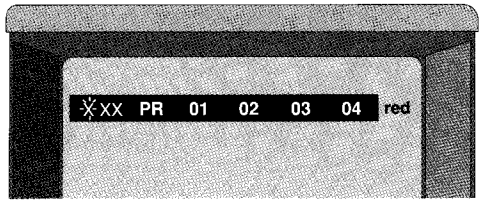
Temporary Unlocking of the four locked programmes



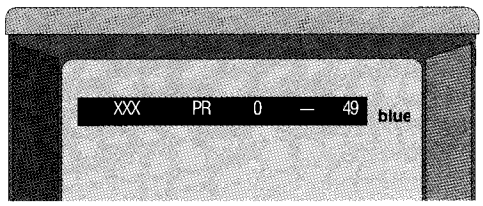
Press the green framed button twice. The above display will appear. Enter your password (eg 234). The display will disappear, locked programmes can be watched, programming is possible. Four programmes will be locked automatically, if you switch your TV set OFF and ON again.

c) Locking of all 50/100 Programmes

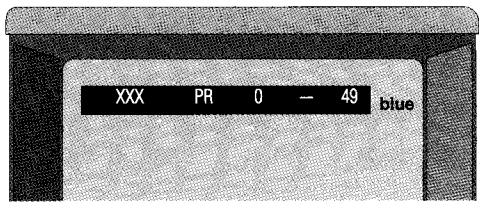
Press the green framed button twice. The display will be:



Press P+ or P- button. The display will change to:



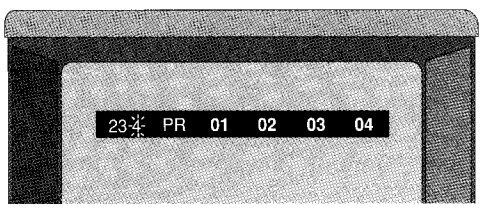
Press the "+" or "-" button. First digit of password will flash. Enter your 3 digit password. (eg 234)



Press " →|← " button. The screen turns black. Only PR 0-49/99 is visible on the screen, this means it is necessary to enter the password. Otherwise no function will be possible at all. If you don't enter the right password the TV will switch off to stand-by after approximately one minute.

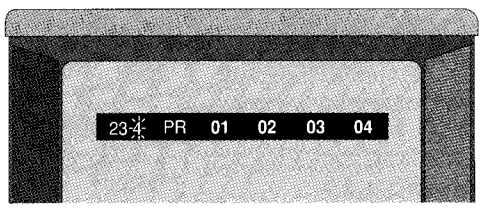
Temporary Unlocking of 50/100 Programmes

Enter your password, locked programmes can be watched, programming is possible. All programmes will be locked automaticaly, if you switch your TV set OFF and ON again.



Changing Locked Programmes

Press green framed button twice .



The last programmed child lock display will appear. To change any of the locked PR numbers or to lock all programmes see the preceding sections.

Cancelling of Child Lock

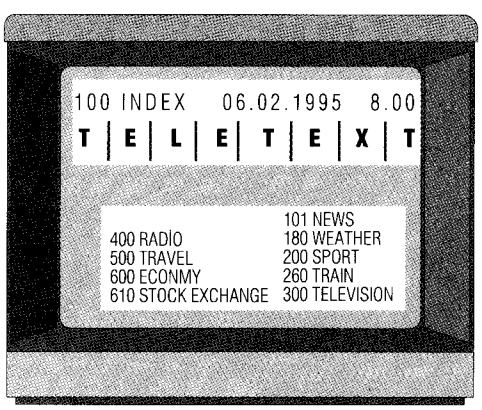
If you want to cancel the child lock (eg. because you don't remember your password) switch off the TV at the ON / OFF switch.
Press and hold "+" and " -" buttons on the TV set at the same time as pressing the ON/OFF button on the TV set. The TV set will be ON and the child lock will be completely cleared.

Explanation of Child Lock MENU colours

Blue: Child lock has not been preset.
Red: Child lock has been set to lock the programming procedure or four selected programmes and the programming procedure.
Purple: You are in the process of changing locked programmes.
Black: Appears when all programmes and the

TELETEXT

Depending on the model, your TV may be fitted with teletext.
Teletext is an information and news service available on some programme channels. It enables you to get up to the minute information on such diverse subjects as international events, holidays, shopping or even the local weather for your area.
The signal for teletext is combined with the transmitted signal which provides you with your programmes. To get best results for both, we would recommend that an outdoor aerial is used. Poor reception will either stop teletext being received, or will cause errors in the text displayed on the screen (i.e. words missing from sentences or letters missing from words). Even with good reception some errors can occur. However, these should correct themselves within a few seconds. Such errors or word corruptions usually indicate a reception fault rather than a fault with your television.

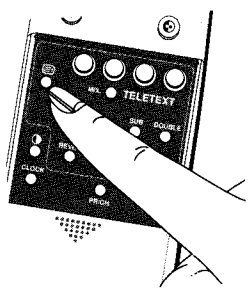


Your TV's Teletext Decoder has Fastext feature

Press TV-TX button on the handset. This will take you from picture mode to TELETEXT mode. Make sure that the channel you are on broadcasts teletext. When pressed again it will take you back to picture mode.

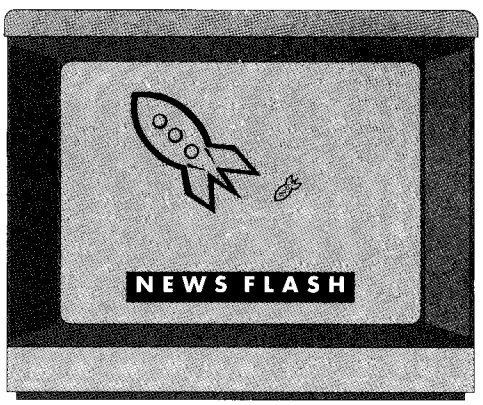
Page Selection

Use number buttons to reach the desired page in three-digit form. You will see your entry on the left of the header line.



Index

Press this button to return to the preceding index page. Depending on the way information is transmitted by each TV channel, this index button may need to be pressed more than once to return to the main index page. (Page 100).



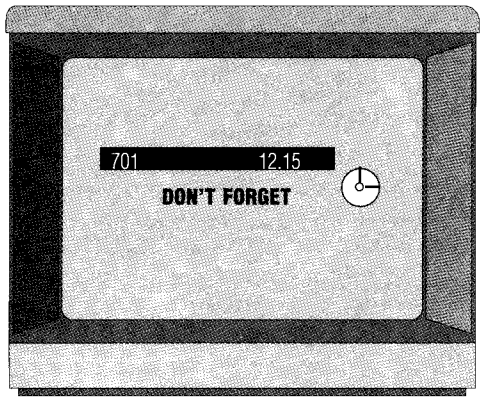
Update

This button allows you to clear the text and return to a TV programme, but the TV displays the sign. When the page is found, the TV displays the page number. When it is found, press the Update button to return to the page you wanted.

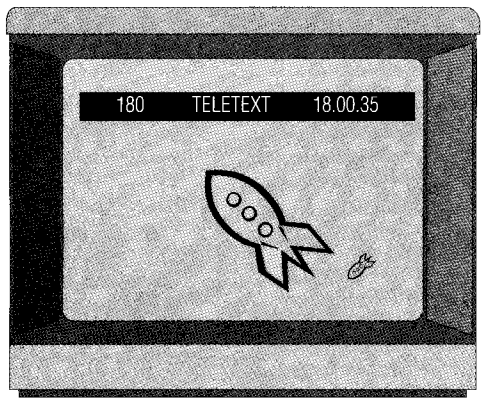
If there is a NEWS FLASH page, see subject index to view this page.

Whenever an updated newsflash is available, the updated news item will appear over the normal TV programme. Press the UPDATE button to make the news information disappear. Updated news will appear again when the news changes.

Alarm Page
Some teletext programmes transmit an alarm page. Select this page as instructed on screen and then set an alarm time. When the set time is reached, a warning label appears on screen.

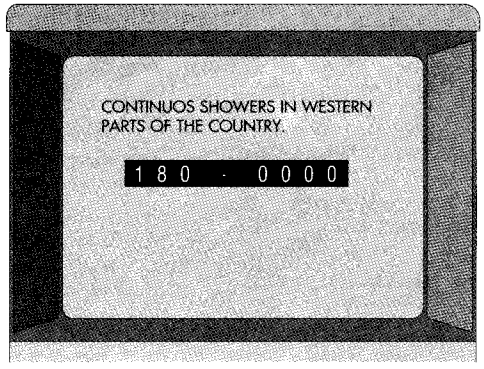


Double
This will expand the top and bottom halves of the page to double height when repeatedly pressed.



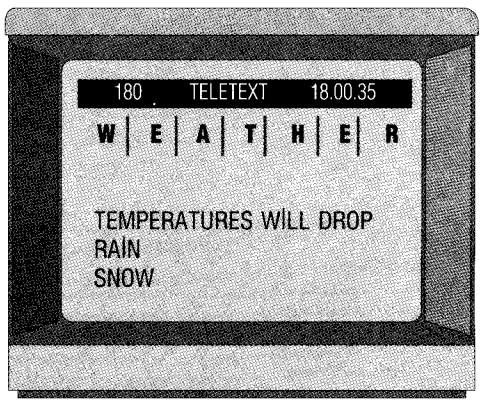
Mix
Press this button to superimpose the text over the TV picture on the screen. Press again to return to full teletext page.

Reveal
Sometimes a teletext page contains concealed information, for example in a quiz or puzzle. To display the concealed information press this button.



Sub
Some text pages have extensions or sub-pages containing additional information.These can be viewed by keying in the four digit number using the numeric keypad.
It may take some time for the automatic changing of the subpages to reach the sub page you require. It is possible to enter your required sub-page and continue watching the normal programme until the correct sub-page is found using SUB button again. To return to normal text functions press 'SUB' button again.

Stop
This button allows you to "hold" certain pages of teletext information until pressed again to cancel "hold" and to proceed to the next page.



Clock
A real time clock transmitted constantly whilst the channel is being broadcast which will be displayed.

Fastext
Colour coded buttons are employed for FASTEXT. Whenever you have selected a page, several subject titles may appear at the bottom in coloured forms. By pressing one of the four colour coded buttons, you will go directly to that particular page without having to select the page using the numeric pad.

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CIRCUIT DESCRIPTIONS

1. MICROCONTROLLER SDA 20581-A504

1.1. SIESTA-MB Overview

SIESTA-MB TV tuning and control system is based on the SDA 20561 microcontroller. The systems offer teletext, on screen display (OSD), and IR remote control of all functions.

As additional ICs are used:

Nonvolatile memory	SDA 2526 or SDA 2546
PLL	SDA 3202-3 SDA 3302
Teletext decoder	SDA 5243
Data slicer	SDA 5231-2
IR transmitter	KS 51800
IR preamplifier	SFH 505A or SFH 506-38

1.2. SALIENT FEATURES

General:

- Display of program number, channel number, tv standard, station label, analog values, space sound, stereo sound, dual sound, quasi-stereo and mute is done by OSD (On Sreen Display).
- Single LED's for IR active and stereo (tone 1, tone 2) indication.
- Local control (4 keys)
- IR remote control
- Control of contrast, brightness and saturation by analog voltages (programable)
- Nonvolatile memory for 50 or 100 programs, station label, optimum analog values and system parameters.
- Individual volume level for each program
- Control line for AV
- Control lines for 3 external sources
- Control lines for tv standard selection
- Automatic switch-off when carrier disappears for more than 5 minutes
- Software protection against tube flashovers with internal watchdog timer
- Sleep timer (30, 60, 90, 120 min.)
  Parental Control

TUNING:

- Frequency synthesis tuning (62.5 kHz steps)
- 192 step fine tuning
- Channels corresponding to standards B/G, OIRT,L and I (I+)
- 50 or100 programs selectable by directly entering a program number or by up/down function depending on the NVM size.
- Channel selection by directly entering a channel number or by up/down function

Sound:

- Mono sound control by analog voltage

Teletext:

NORMAL	TEXT	4 Page Memory
FAST	TEXT	4 Page Memory

Service mode:

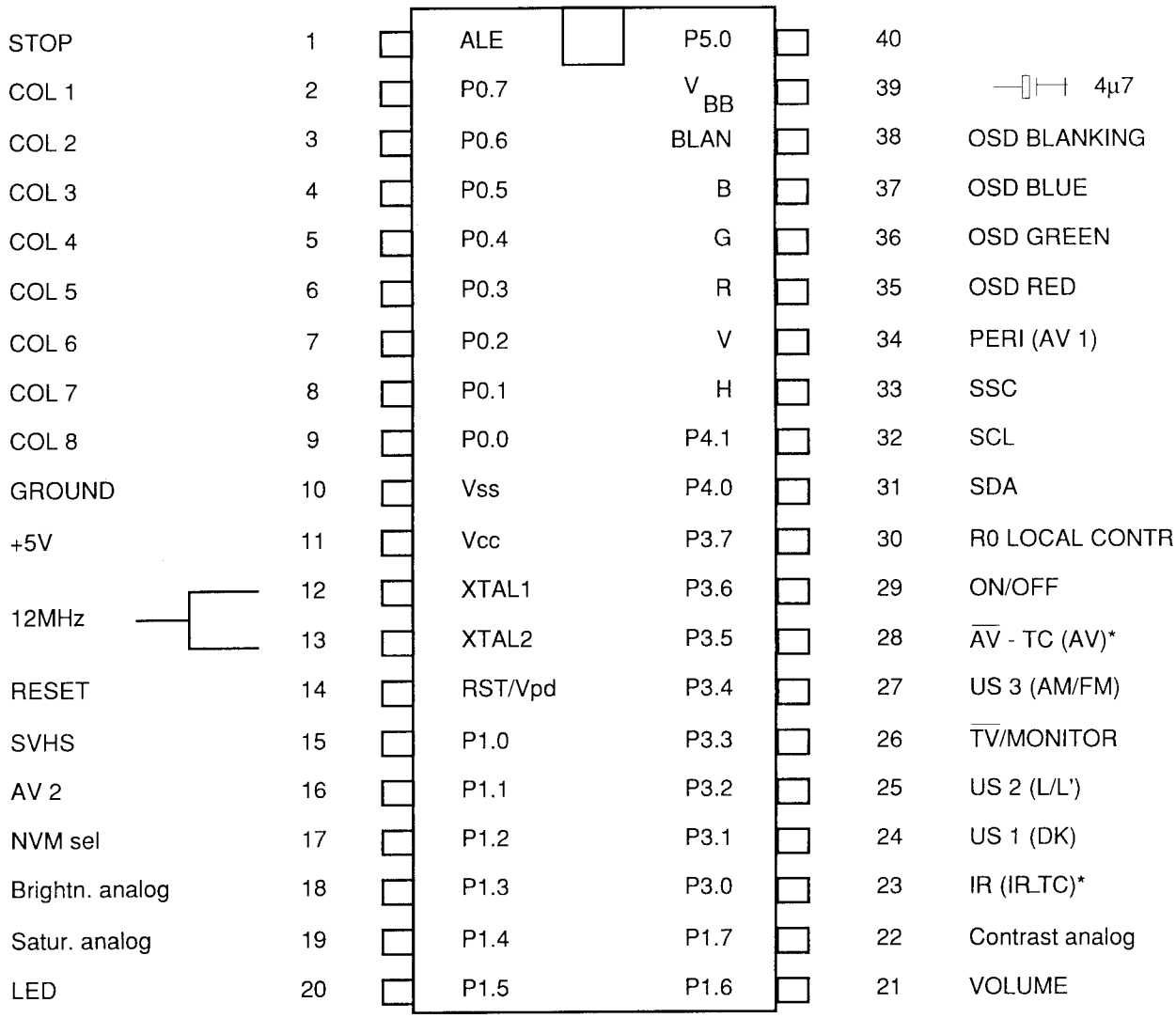
- System configuration with service mode

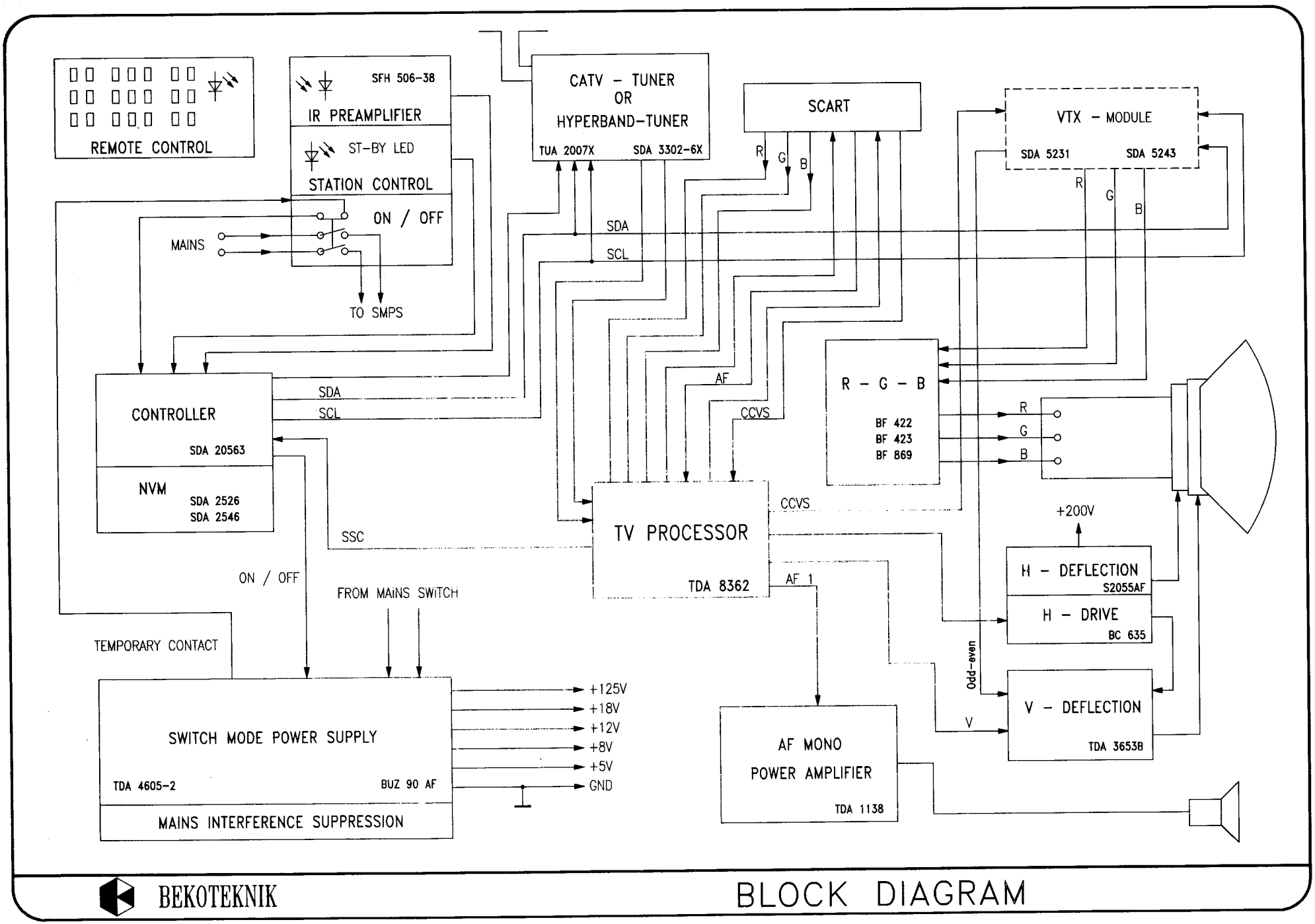
1.3. LOCAL CONTROL

The local control keyboard of the system involves 4 keys. Each key is scanned by the microcontroller with a 7 Hz scan rate, so the maximum repeat rate of commands is 7/s. If more than one key is pressed, the system will give no response.

SDA 20581-A504

Microcontroller Pinning





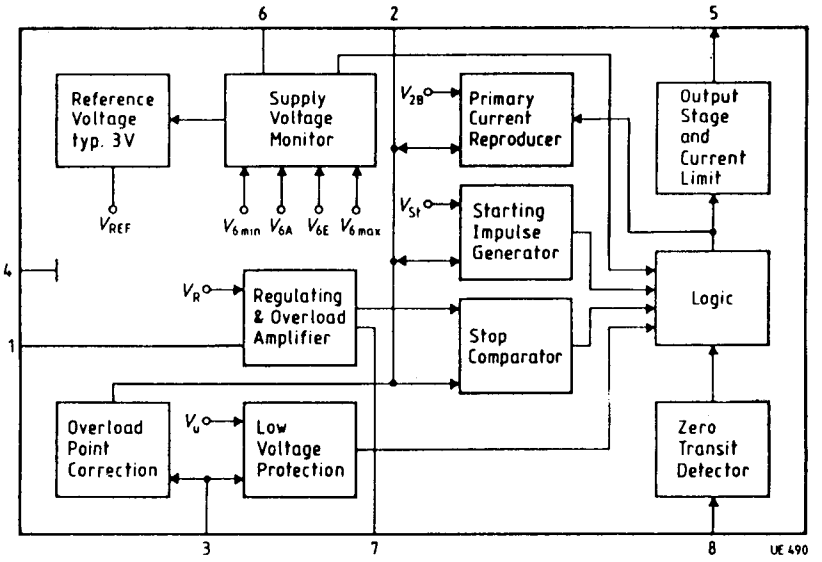
BEKOTEKNIK

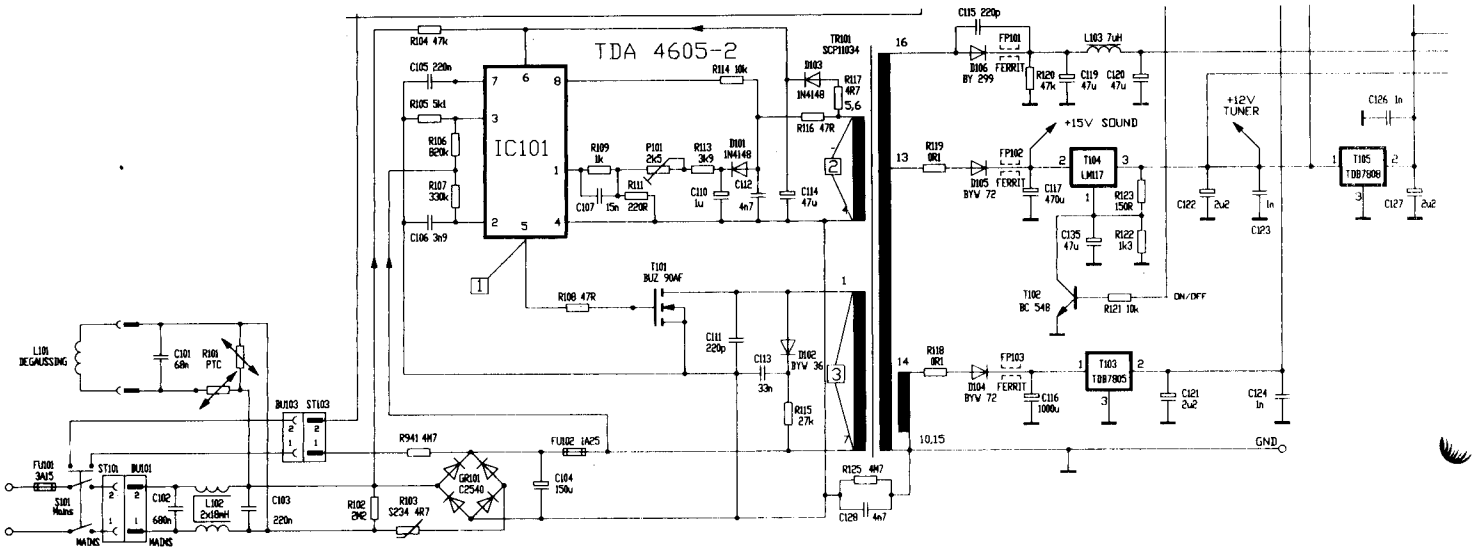
BLOCK DIAGRAM

POWER SUPPLY

TDA 4605-2
Control IC for Switched-Mode
Power Supplies using
MOS Transistors

Block Diagram





START UP

When TV is switched ON a start voltage (9V) is geneted over R104 at pin 6 of IC 101, TDA4605-2, IC101 produces a 50 KHz squarewave, whic is supplied to the base of T101, BUZ90A over 106 Collector of T101 is connected to 330 V with switch mode transformer TR101, 330 V is chopped at the primary side of the transformer. This generates varios voltages at pins 5,6,13,14,16 of the secondary side of the transformer TR101.

NORMAL OPERATION

Voltage from pin 5,6 of transformer Tr101 is reftified wieth D103 and applied to pin 6 of IC101. When this stable voltage 12 V dC reaches pin 6, start voltage is interrupted.

VOLTAGE REGULATION

Voltage obtained from D103 goes over D101, R113, P101, to pin 1 of IC101, TDA 4605-2. This circuit regulates the main supply voltage U1 125V. Pin 8 of IC101 is connected over R114 to pin 8 of TR101, which performs automatic voltage control.

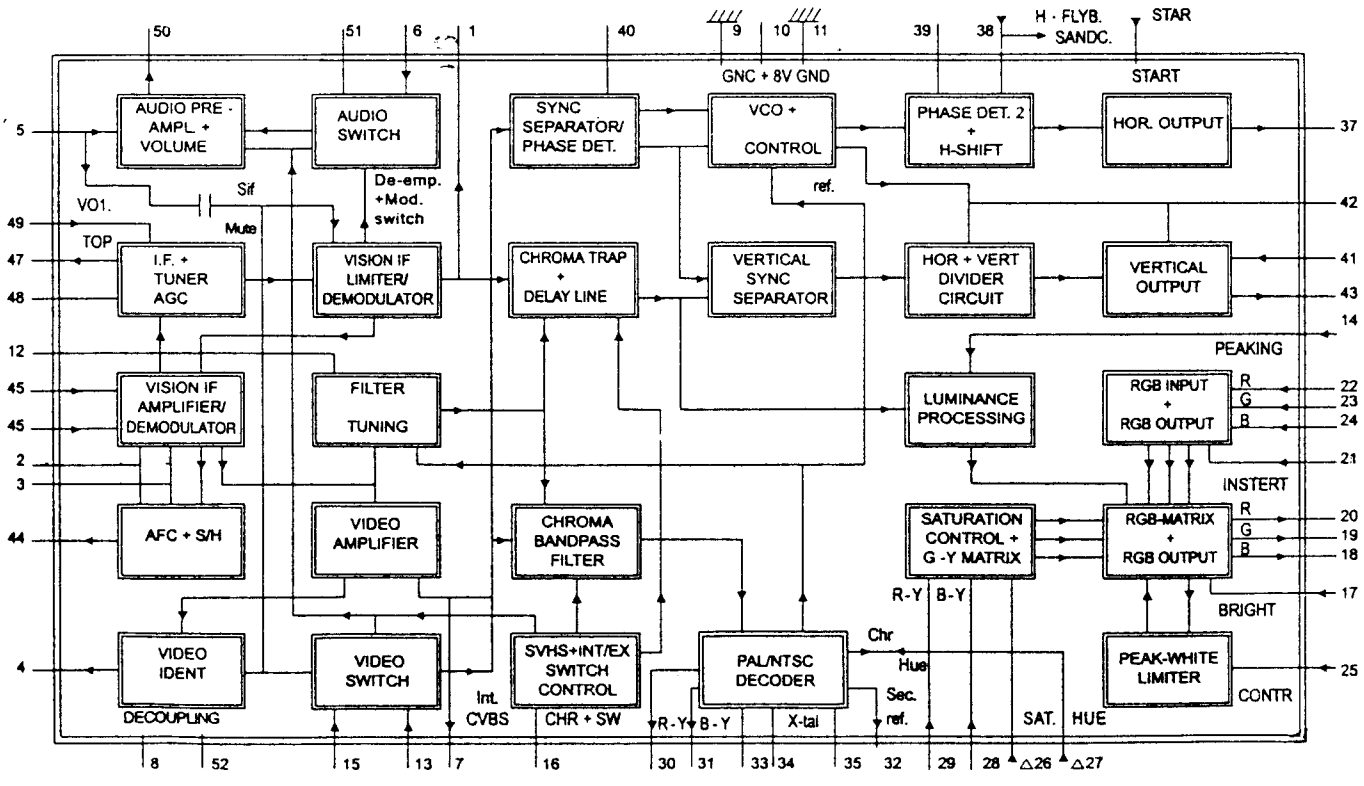
TDA 8362 Multistandard TV Processor
TDA 8361 Pal TV Processor

Vision IF amplifier, video demodulator, video amplifier, AGC and AFC are suitable for both negative and positive modulation.
Sound limiter, demodulator and amplifier with volume control.
Inputs and switches for external audio and CVBS signals.
Synchronization circuit with drive circuits for horizontal and vertical deflection.
Separate supply pin for starting the horizontal oscillator from the main rectifier.
X-ray protection (combined with the 2 ᵐᵒ phase detector phase detector pin).
PAL/NTSC colour decoder in which the chroma filters (bandpass and trap) and the luminance delay line have been integrated. The circuit has a separate chroma input and the filters can be switched-off so that S-VHS signals (via an external switch) can be applied to the IC.
For SECAM applications an (alignment-free) SECAM- decoder can be added to the IC.
Peaaking circuit in the luminance channel.
RGB- output circuit with linear inputs for On-Screen Character Display.

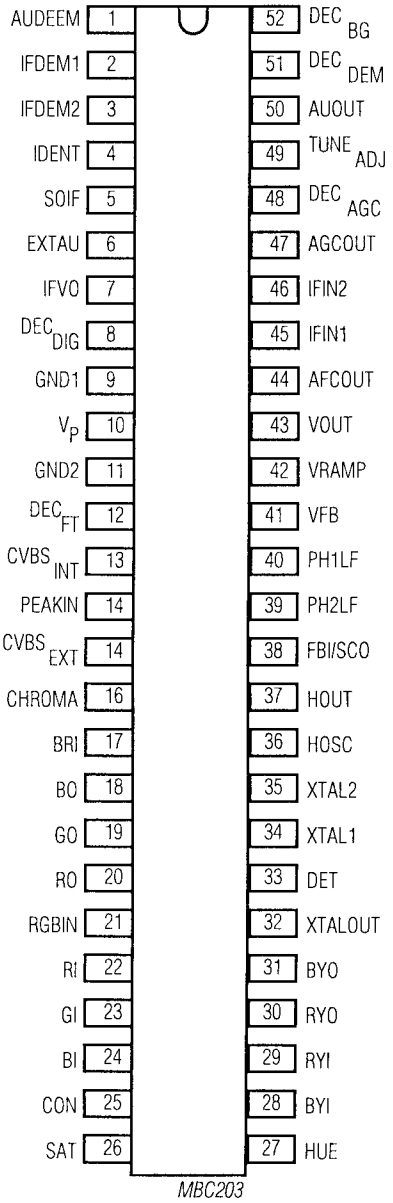
The supply Voltage for the IC is 8 Volts. It is mounted in an S-DIL envelope with 52 pins.

b) Features
-Multi-standard vision IF circuit
(positive and negative modulation)
-Multi-standard FM sound demodulator (4.5MHz to 6.5 MHz)
-Video and audio switches
(CVBS int/ext, S-VHS and audio int/ext)
-Integrated chroma trap and bandpass filters (auto-calibrated)
-Luminance delay line integrated
-PAL/NTSC colour decoder with automatic search system
-Easy interfacing with linear RGB inputs and fast blanking
-RGB-control circuit with linear RGB inputs and fast blanking
-Horizontal synchronization with two control loops and an alignment-free horizontal oscillator, vertical count-down circuit and a vertical pre-amplifier
-Low dissipation (only 600 mW)
-Small amount of peripheral components compared with completion IC's.
-Only one adjustment (vision IF demodulator)

2) Block-Diagram



SYMBOL	PIN	DESCRIPTION
AUDEMM	1	audio de-emphasis
IFDEM1	2	IF demodulator tuned circuit
IFDEM2	3	IF demodulator tuned circuit
IDENT	4	video identification output
SOIF	5	sound IF input and volume control
EXTAU	6	external audio input
IFVO	7	IF video output
DEC D/G	8	decoupling digital supply
GND1	9	ground 1
V	10	positive supply voltage (+8 V)
GND2	11	ground 2
DEC FT	12	decoupling filter tuning
CVBS INT	13	internal CVBS input
PEAKIN	14	peaking control input
CVBS EXT	15	external CVBS input
CHROMA	16	chrominance and A/V switch input
BRI	17	brightness control input
BO	18	blue output
GO	19	green output
RO	20	red output
RGBIN	21	RGB insertion and blanking input
RI	22	red input
GI	23	green input
BI	24	blue input
CON	25	contrast control input
SAT	26	saturation control input
HUE	27	hue control input (or chrominance output)
BYI	28	B-Y input signal
RYI	29	R-Y input signal
RYO	30	R-Y output signal
BYO	31	B-Y output signal
XTALOUT	32	4.43 MHz output for TDA8395
DET	33	loop filter burst phase detector
XTAL1	34	3.58 MHz XTAL connection
XTAL2	35	4.43 MHz XTAL connection
HOSC	36	start horizontal oscillator
HOUT	37	horizontal output
FBI/SCO	38	flyback input/sandcastle output
PH2LF	39	phase 2 loop filter
PH1LF	40	Phase 1 loop filter
VFB	41	Vertical teedback input
VRAMP	42	Vertical ramp generator
VOUT	43	vertical output
AFCOUT	44	AFC output
IFIN1	45	IF Iput 1
IFIN2	46	IF Input 2
AGCOUT	47	tuner AGC output
DEC	48	AGC decoupling capacitor
TUNE	49	tuner take-over adjustment
AUOUT	50	audio output
DEC Dem	51	decoupling sound demodulator
DEC BG	52	decoupling bandqap supply



MBC203

FUNCTIONAL DESCRIPTION

Video IF amplifier

The IF amplifier contains 3 AC-coupled control stages with a total gain control range of greater than 60 dB. The sensitivity of the circuit is comparable with that of modern IF ICs. The reference carrier for the video demodulator is obtained by means of passive regeneration of the picture carrier. The external reference tuned circuit is the only remaining adjustment of the IC.
The polarity of the demodulator can be switched so that the circuit is suitable for both positive and negative modulated signals.
The AFC circuit is driven with the same reference signal as the video demodulator. To ensure that the video content does not distrub the AFC operation a sample-and-hold circuit is incorporated; the capacitor for this function is internal. The AFC output voltage range is 6 V.
The AGC detector operates on lop-sync or top white-level, depending on the position of the demodulator. The AGC detector time constant capacitor is connected externally. This is mainly because of the flexibility of the application. The time constant of the AGC system during positive modulation is slow, this is to avoid any visible picture variations. This, however, causes the system to react very slowly to sudden changes in the input signal amplitude. To overcome this problem a speed-up circuit has been included which detects whether the AGC detector is activated every frame period. If, during a 3-frame period, no action is detected the speed of the system is increased.
The circuit contains a video identification circuit which is independent of the synchronization circuit. Consequently, search tuning is possible when the display section of the receiver is used as a monitor. The identification output voltage is LOW when no transmitter is identified (in this condition the sound demodulator is switched off, mute function). When a transmitter is identified the output voltage goes HIGH. The voltage level is dependent on the frequency of the incoming chrominance signal.

Sound Circuit

The sound bandpass and trap filters have to be connected externally. The filtered intercarrier signal is fed to a limiter circuit and is demodulated by means of a PLL demodulator. The PLL circuit tunes itself automatically to the incoming signal, consequently, no adjustment is required.
The volume is DC controlled. The composite audio output signal has an amplitude of 700 mV (RMS) at the maximum volume control setting. The de-emphasis capacitor has to be connected externally. The non-controlled audio signal can be obtained from this pin (pin 1) via a buffer stage. This signal, and the external audio input signal, must have an amplitude of 350 mV (RMS). The audio/video switch is controlled via the chrominance input (pin 16).

Synchronization Circuit

The sync separator is preceded by a voltage controlled amplifier which adjusts the sync-pulse amplitude to a fixed level. The sync-pulses are then fed to the slicing stage (separator) which operates at 50% of the amplitude.
The separated sync pulses are led to the first phase detector and to the coincidence detector. The coincidence detector is used for transmitter identification and to detect whether the line oscillator is synchronized. The first PLL has a very high static sleepness, this ensures that the phase of the picture is independent of the line frequency. The line oscillator operates at twice the line frequency (the oscillator capacitor is internal). Because of the spread of internal components an automatic adjustment circuit has been added to the IC. The circuit compares the oscillator frequency with that of the crystal oscillator, in the colour decoder, which results in a free-running frequency that deviates less than 2% from the typical value.
The circuit employs a second control loop to generate the drive pulses for the horizontal driver stage.
X-ray protection can be realised by switching the pin of the second control loop (pin 39) to the positive supply line. The detection circuit must be connected externally. When the X-ray protection is active the horizontal output voltage goes HIGH. When the voltage on this pin (pin 37) returns to its normal level the horizontal output is released again.
The IC contains a start-up circuit for the horizontal oscillator. When this feature is required a current of 5.5 mA should be applied to pin 36. For an application without start-up both supply pins (10 and 36) must be connected to the 8 V supply line.
The drive signal for the vertical ramp generator is

generated by means of a divider circuit. The RC network for the ramp generator is external.

Integrated Video Filters

The circuit contains a chrominance bandpass and trap circuit. The filters are realised by means of gyrator circuits and are automatically tuned by companing the tuning frequency with the crystal frequency of the decoder. The chrominance trap is only active when a separate chrominance input pin is connected to ground or to Vp. When this pin is left open-circuit, the trap is switched off to enable the circuit can be used also for S-VHS applications. The luminance delay line and the delay for the peaking circuit are also realised by means of gyrator circuits.

Colour Decoder

The colour decoder contains an alignment-free crystal oscillator, a colour killer circuit and colour difference demodulators. The 90^0 phase shift for the reference signal is achieved internally. The demodulation angle and gain ratio for the colour difference signals (PAL and NTSC) are switched to the required standars depending on the incoming signal.

The colour decoder is very flexible, together with the SECAM decoder (TDA8395) an automatic multistandard decoder can be designed. It is also possible to use it for only one standard when just one crystal is connected to the IC. The following applications are possible:

PAL ONLY

Connect one, or two crystals to the IC (when only one crystal is used the other crystal pin has to be connected to the positive supply rail via a 30kΩ resistor) and the hue control pin to the positive supply via a 30 kΩ (approximate) resistor.

PAL/SECAM

The chrominance input signal for the SECAM decoder must be identical to that of the PAL decoder. This can be realised by means of an external switch which is connected in parallel with the internal video switch. In the TDA8362, when the NTSC option is not required, the output signal from the switch can be obtained from the hue control input when it is connected to the positive supply line via a suitable resistor.

RGB Output Circuit

The colour difference signals are matrixed with the luminance signal to obtain the RGB signals. Linear amplifiers have been chosen for the RGB inputs so that the circuit is suitable for incoming signals from the SCART connector. The contrast and brightness controls operate on internal and external signals. The fast blanking pin has a second detection level at 4 V. When this level is exceeded the RGB outputs are blanked so that "On-Screen-Display" signals can be applied to the outputs.

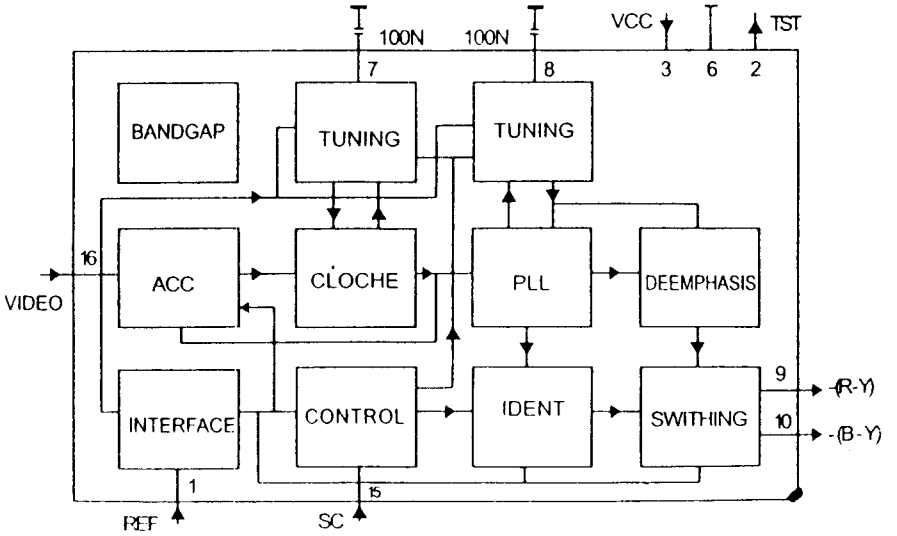
The output signal has an amplitude of approximately 4 V, black-to-white with nominal input signals and nominal control settings.

TDA 8395 SECAM Decoder

Description

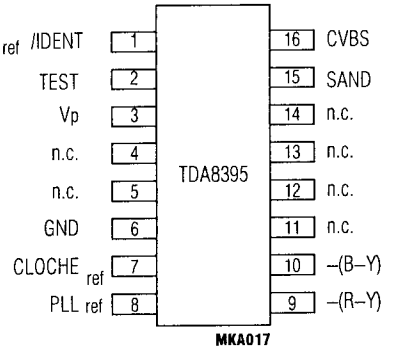
The TDA8395 is a self-calibrating, fully integrated SECAM decoder. The IC should preferably be used in conjunction with the PAL decoder TDA8362 and with the switched capacitor baseband delay circuit TDA4660. The IC incorporates HF and LF filters, a demodulator and an identification circuit (luminance is not processed in this IC). The IC needs no adjustments and very few external components are required. A highly stable reference frequency is required for calibration and a two-level sandcastle pulse for blanking and burst gating.

Block Diagram



Pin Configuration

SYMBOL	PIN	DESCRIPTION
PH2LF	39	phase 2 loop filter
PH1LF	40	phase 1 loop filter
VFB	41	vertical feedback input
VRAMP	42	vertical ramp generator
VOUT	43	vertical output
AFCOUT	44	AFC output
IFIN1	45	IF input 1
IFN2	46	IF input 2
AGCOUT	47	tuner AGC output
DEC	48	AGC decoupling capacitor
TUNE	49	tuner take-over adjustment
AUOUT	50	audio output
DEC_{DEM}	51	decoupling sound demodulator
DEC_{BG}	52	decoupling bandgap supply



FUNCTIONAL DESCRIPTION

The TDA8395 is a sell-calibrating SECAM decoder designed for use with a baseband delay circuit.

During frame retrace a 4.433619 MHz reference frequency is used to calibrate the filters and the demodulator. The reference frequency should be very stable during this period.

The cloche filter is a gyrator-capacitor type filter the resonance frequency of which is controlled during the calibration period and offset during scan; this ensures the correct frequency during calibration.

The demodulator is a Phase-Locked Loop (PLL) type demodulator which uses the frequency reference and the bandgap reference to force the PLL to the required demodulation characteristic. The low frequency de-emphasis is matched to the PLL and is controlled by the tuning voltage of the PLL.

A digital identification circuit scans the incoming signal for SECAM (only line-identification is implemented). The identification circuit needs to communicate with the TDA8362 to guarantee that the output signal from the decoder is only available when no PAL signal has been identified. If a SECAM signal is decoded a request for colour-on is transmitted to pin 1 (current is sunk). If the signal request is granted (i.e. pin 1 is HIGH therefore no PAL) the colour difference outputs (-(B-Y) and - (R-Y)) from the output signals from the TDA8395 are switched ON.

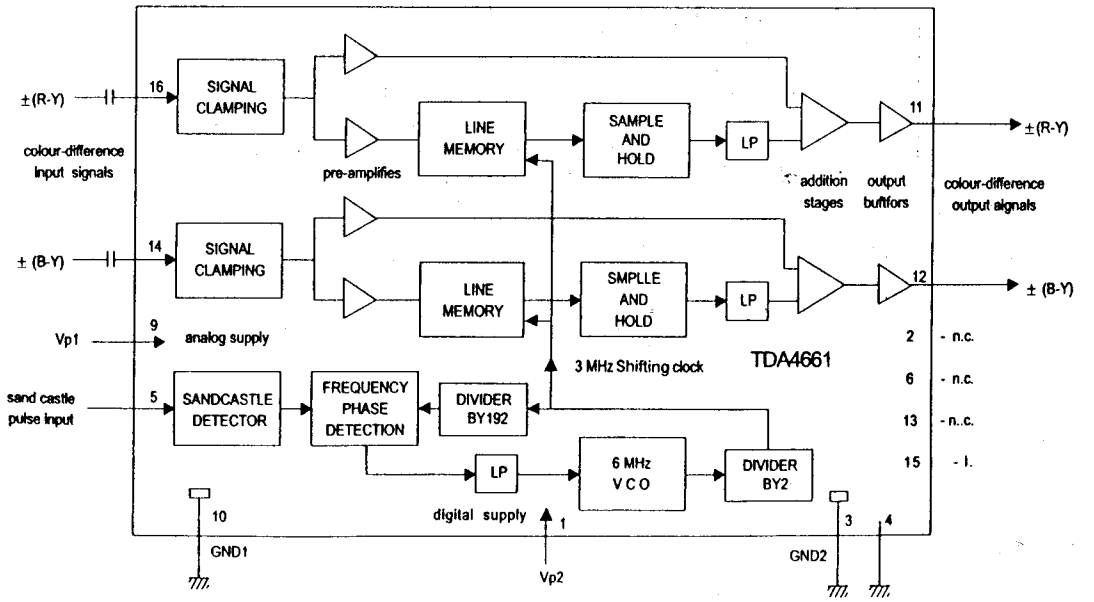
If no SECAM signal is decoded during a two-frame period the demodulator will be initialized below another attempt is made also during a two-frame period. The CD outputs will be blanked or high-impedance depending on the logic level at pin 1.

A two-level sandcastle pulse generates the required blanking periods and, also, clocks the digital identification pulse on the falling edge of the burst gate pulse. To enable the calibration period to be defined the vertical retrace is discriminated from the horizontal retrace, this is achieved by measuring the width of the blanking period.

TDA 4661 Baseband Delay Line Description

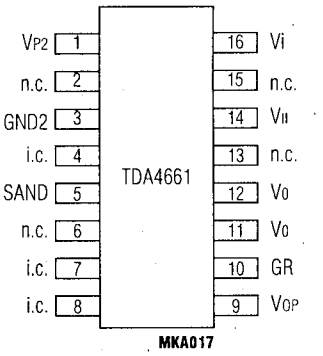
The TDA4660 is an integrated baseband delay line circuit with one line delay. It is suitable for decoders with colour-difference signal outputs ± (R-Y) and ± (B-Y).

Block Diagram



PINNING

SYMBOL	PIN	DESCRIPTION
V_{P2}	1	+5 V supply voltage for digital part
n.c.	2	not connected
GND2	3	ground for digital part (0 V)
i.c.	4	internally connected
SAND	5	sandcastle pulse input
A.C	6	not connected
i.c.	7	internally connected
i.c.	8	internally connected
V_{P1}	9	+5 V supply voltage for analog part
GND1	10	ground for analog part (0 V)
$V_{O(R-Y)}$	11	± (R-Y) output signal
$V_{O(B-Y)}$	12	± (B-Y) output signal
n.c.	13	not connected
$V_{I(B-Y)}$	14	± (B-Y) input signal
n.c.	15	not connected
$V_{I(R-Y)}$	16	± (R-Y) input signal



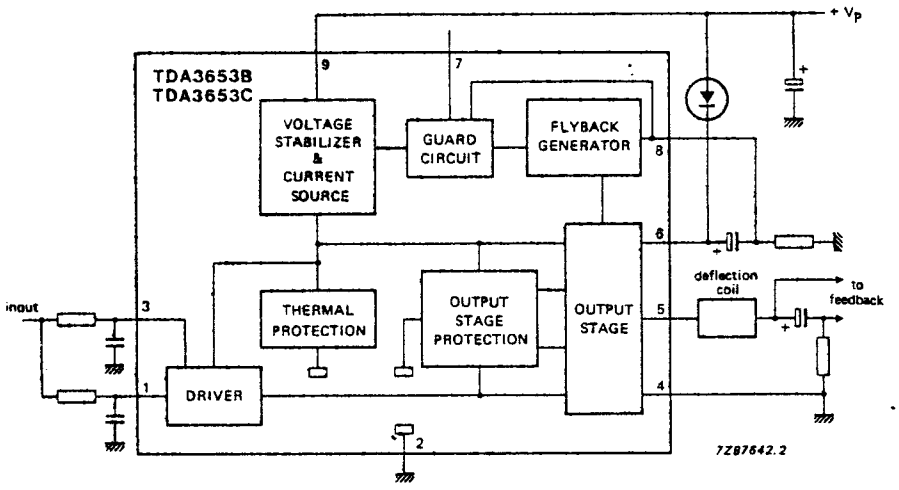
FEATURES

- Twocomb filters, using the switchedcapacitor technique, for one line delay time (64 ms)
- Adjustment-free application
- No crosstalk between SECAM colour carriers (diaphoty)
- Handles negative or positive colourdifference input signals
- Clamping of AC-coupled input signals (± R-Y) and ± (B-Y)
- VCO without external components
- 3 MHz internal clock signal derived from a 6 MHz VCO, line-locked by the sandcastle pulse (64 ms line)
- Sample-and-hold circuits and low-pass filters to suppress the 3 MHz clock signal
- Addition of delayed and non-delayed output signals
- Output buffer amplifiers

TDA 3653 B Vertical Deflection and Guard Circuit Description

The TDA3653B/C is a vertical deflection output circuit for drive of various deflection systems with currents up to 1.5 A peak-to-peak.

Block Diagram



FUNCTIONAL DESCRIPTION

Output stage and protection circuit

Pin 5 is the output pin. The supply for the output stage is fed to pin 6 and the output stage ground is connected to pin 4 the output transistors of the class-B output stage can each deliver 0.75 A maximum. The maximum voltage for pin 5 and 6 is 60 V.
The output power transistors are protected such that their operation remains within the SOAR area. This is achieved by the co-operation of the thermal protection circuit, the current-voltage detector, the short-circuit protection and the special measures in the internal circuit layout.

Driver and switching circuit

Pin 1 is the input for the driver of the output stage. The signal at pin 1 is also applied via external resistors to pin 3 which is the input of a switching circuit. When the flyback starts, this switching circuit rapidly turns off the lower output stage and so limits the turn-off dissipation. It also allows a quick start of the flyback generator.
External connection of pin 1 to pin 3 allows for applications in which the pins are driven separately.

Flyback Generator

During scan the capacitor connected between pins 6 and 8 is charged to a level which is dependent on the value of the resistor at pin 8 (see Fig.1).
When the flyback starts and the voltage at the output pin (pin 5) exceeds the supply voltage, the flyback generator is activated.
The supply voltage is then connected in series, via pin 8, with the voltage across the capacitor during the flyback period.
This implies that during scan the supply voltage can be reduced to the required scan voltage plus saturation voltage of the output transistors.
The amplitude of the flyback voltage can be chosen by changing the value of the external resistor at pin 8. It should be noted that the application is chosen such that the lowest voltage at pin 8 is > 2.5 V during normal operation.

Guard circuit

When there is no deflection current and the flyback generator is not activated, the voltage at pin 8 reduces to less than 1.8 V. The guard circuit will then produce a DC voltage at pin 7, which can be used to blank the picture tube and thus prevent screen damage.

Voltage Stabilizer

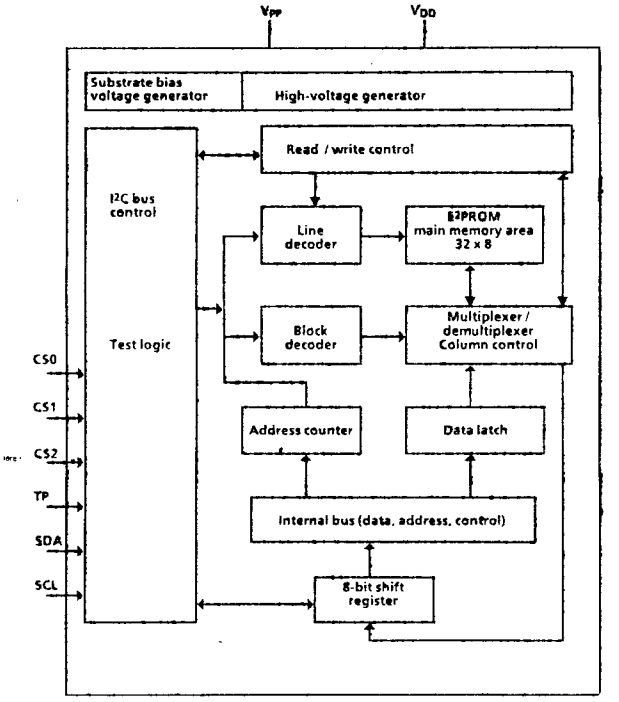
The internal voltage stabilizer provides a stabilized supply of 6V to drive the output stage, which prevents the drive current of the output stage being affected by supply voltage variations.

SDA 2526-2/2546-2 Nonvolatile Memory, 2kbit E^2PROM with I^2C Bus

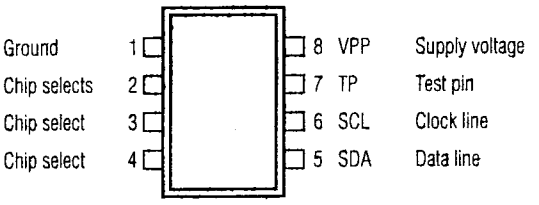
Description

256X8/256X16 bit organization, word-organized programm able nonvolatile memory in n-channel floating-gate technology (E^2PROM)

Block Diagram



Pin Configuration



Features

Control functions of the I^2C bus

The memory component is controlled by the controller (master) via the I^2C bus in two operating modes: read-out cycle, and reprogramming cycle, including erase and write to a memory address. In both operating modes, the controller, as transmitter, has to provide 3 bytes and an additional acknownledge clock pulse to the bus after the start condition. During a memory read, at least nine additional clock pulses are required to accept the data from the memory and the acknowledge master, before the stop condition may follow. In the case of programming, the active programming process is only started by the stop condition after data input (see figure 3).

Thi chip select word contains the 3 chip select bits C50, C51 and C52, thus allowing 8 memory chips to be connected in parallel. Chip select is achieved when the three control bits logically correspond to the selected conditions at the select inputs.

Check for end of programming or abortion of programming process

If the chip is addressed during active reprogramming by entering CS/E, the programming process is terminated. If, however, it is addressed by entering CS/A, the entry will be ignored. This allows the user to check whether the end of the programming process has been reached (see figure 3).

Memory Read

After the input of the first two control words CS/E and WA, a resetting of the start condition and the input of the third control word CS/A, the memory is set ready to read. During acknowledge clock nine, the memory information is transferred in parallel mode to the shift register. Subsequent to the trailing edge of the acknowledge clock, the data output is low-ohmic and the first data bit can be sampled (see figure 4). With every shift clock, an additional bit reaches the output. After reading a byte, the internal address counter is automatically incremented when the master receiver switches the data line to "low" during the ninth clock (acknowledge master). Any number of memory locations can thus be read one after the other. At address 256, an overflow to address 0 is initiated. With the stop condition, the data output returns to high-impedance mode. The internal sequence control of the memory component is reset from the read to the quiescent state with the stop condition.

Memory Reprogramming

The reprogramming cycle of a memory word comprises an erase and a subsequent write process. During erase, all eight bits of the selected word are set into the "1" state. During write, "0" states are generated according to the information in the internal data register, i.e. according to the third input control word. After the 27th and last clock of the control word input, the active programming process is started by the stop condition. The active reprogramming process is executed under on-chip control.

The time required for reprogramming depends on component deviation and data patterns. Therefore, with rated supply voltage, the erase/write process extends over max. 20 ms, or more typically, 10 ms.

In case of data word input without write request (write request is defined as data bit in data register set to "0"), the write process suppressed and the programming time is shortened. During a subsequent programming of an already erased memory address, the erase process is suppressed again, so that the reprogramming time is also shortened.

Important: Switch-on mode and chip reset

After the supply voltage Vdd has been connected, the data output will be in high-impedance mode. As a rule, the first operating mode to be entered, should be the read process of a word address. As a result of the built-in "power on reset" circuit, programming requests will not be accepted immediately after the supply voltage has been switched on.

Total Erase

Enter the control word CS/E, load the address register with address 0 and the data register with FF (hex) to erase the entire contents of the memory. Switch input C52 to "open" immediately prior to generating the stop condition. The subsequent stop condition triggers a total erase. Upon termination of "total erase", C52 must be reconnected to either 0V or $\leq$ 4.5 V.

TELETEXT MODULE

1.3.5 TELETEXT DATA SLICER SDA 5231

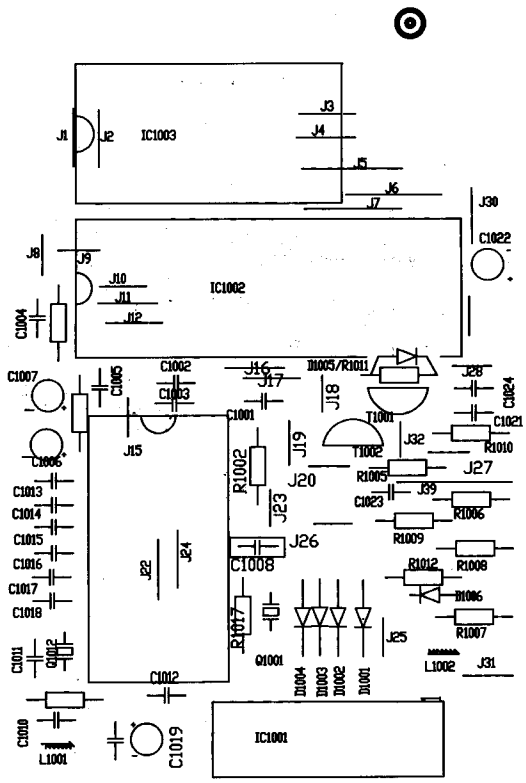
The SDA 5231 data slicer is used in the teletext decoding section to seperate the teletext data signal from the CVBS signal. Information consists of eight bits, where the most significant bit is a parity bit, followed by seven data bits. The teletext signal amplitude is reduced to 50 percent of it's incoming value by the SDA 5231 to reduce the possibility of interference from other sources. A phase shifting circuit together with a crystal oscillator regenerate the data synchronous clock. So clock and data signal can be supplied to the teletext decoder device.
A synchronous separator generates line and field sync pulses. The line sync signal is used to control an on-chip 6MHz oscillator which passes on the clock signal to the teletext decoder.

After attaing line frequency (15,625kHz), the signal is transmitted to the slicer. Here a phase comparator synchronizes the, 6.MHz oscillator to the video signal. Thus, enabling the text to be locked to the cubs signal.

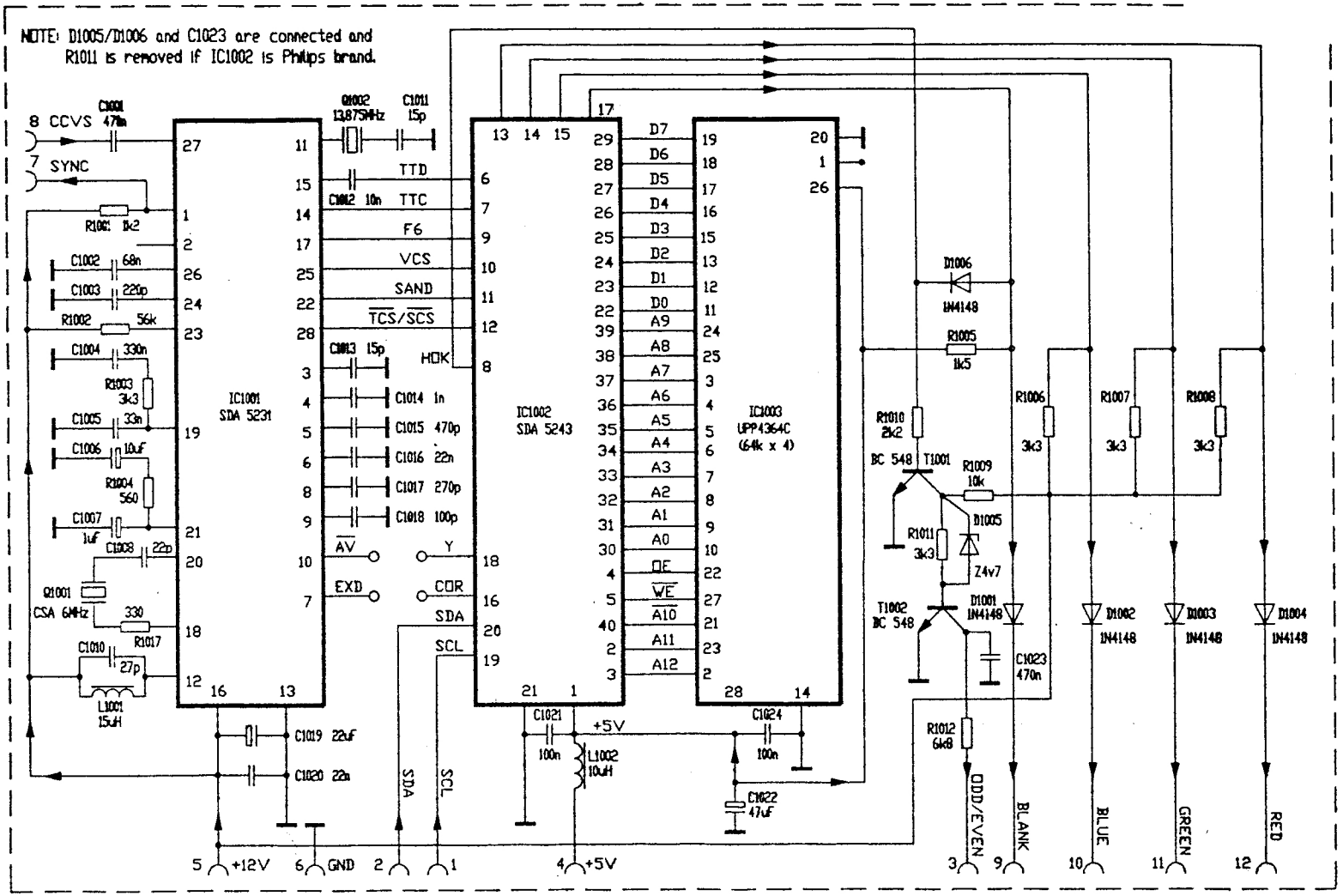
1.3.6 THE TELETEXT PROCESSOR SDA 5248

The teletext processor SD 5248 and IIC bus controlled devices process all funtions necessary in 6 foreign languages English, German, French, Türkish, Spanish, Italien.

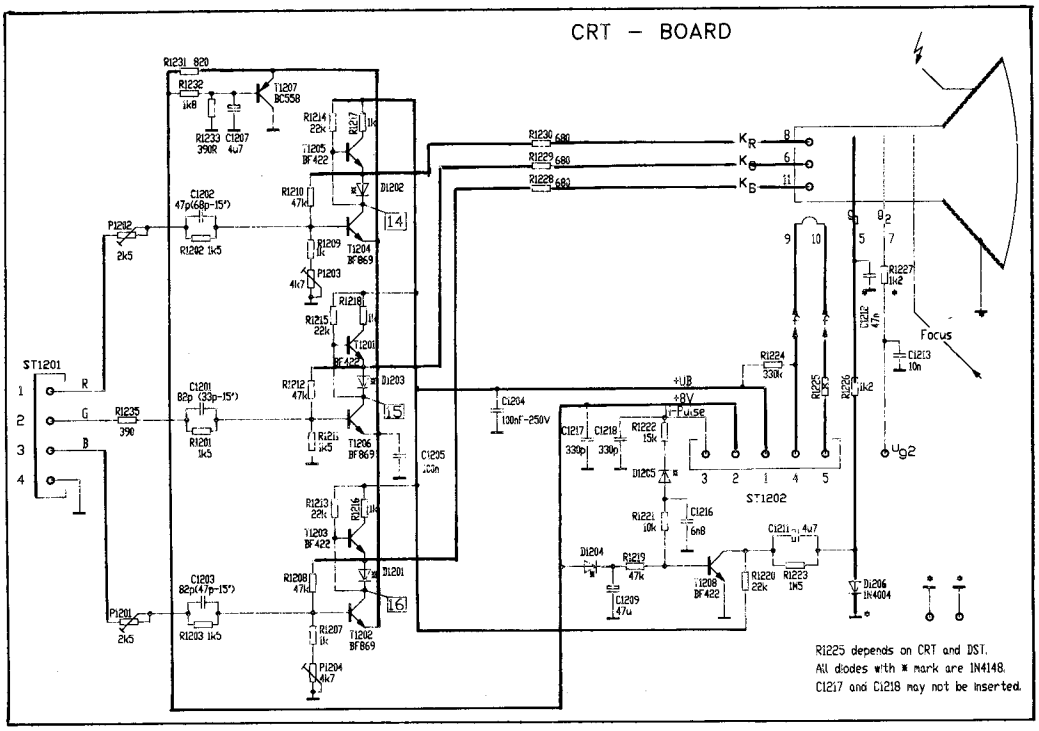
Serial teletext data is received from the SDA 5231 data slicer. Four independent acquisition circuits are responsible for selecting the requested data. After acquisition the data is loaded via a memory interface to an external DRAM. Using DRAM it is possible to store up to 16 pages for fastext 32 pages for toptext. The external DRAM is read out cyclically the data is then processed in the character generator into R-, G-, B-information. Further blanking signal, contrast reduction signal and a Y-signal to control a black and white monitor are generated. Via the IIC bus interface 12 registers can be loaded by the microcontroller and one register can be read and written too.
The SDA 5248 is mounted in a 40 pin DIP case.

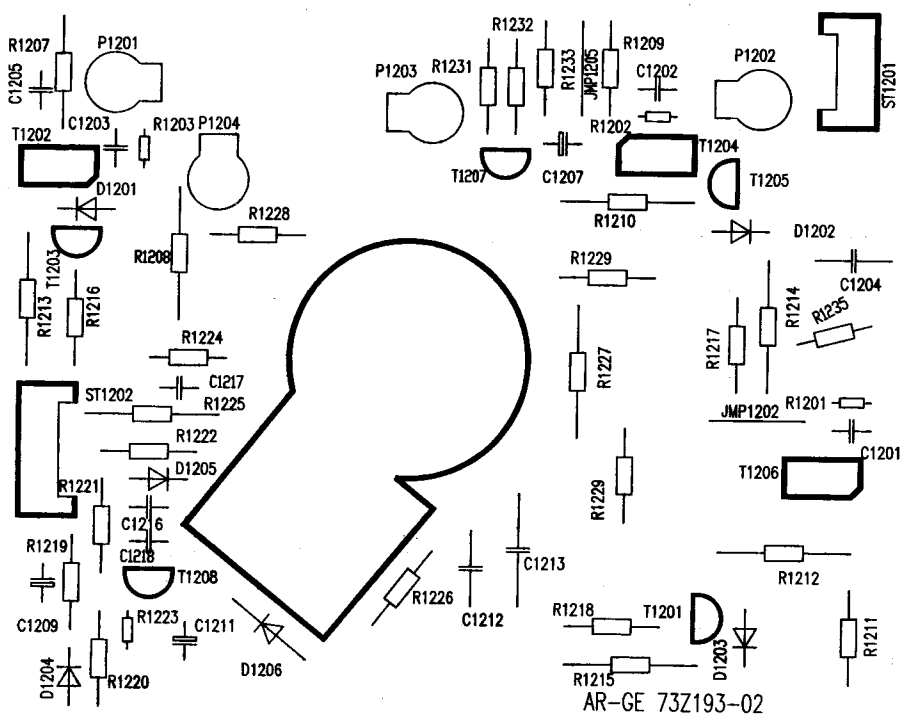


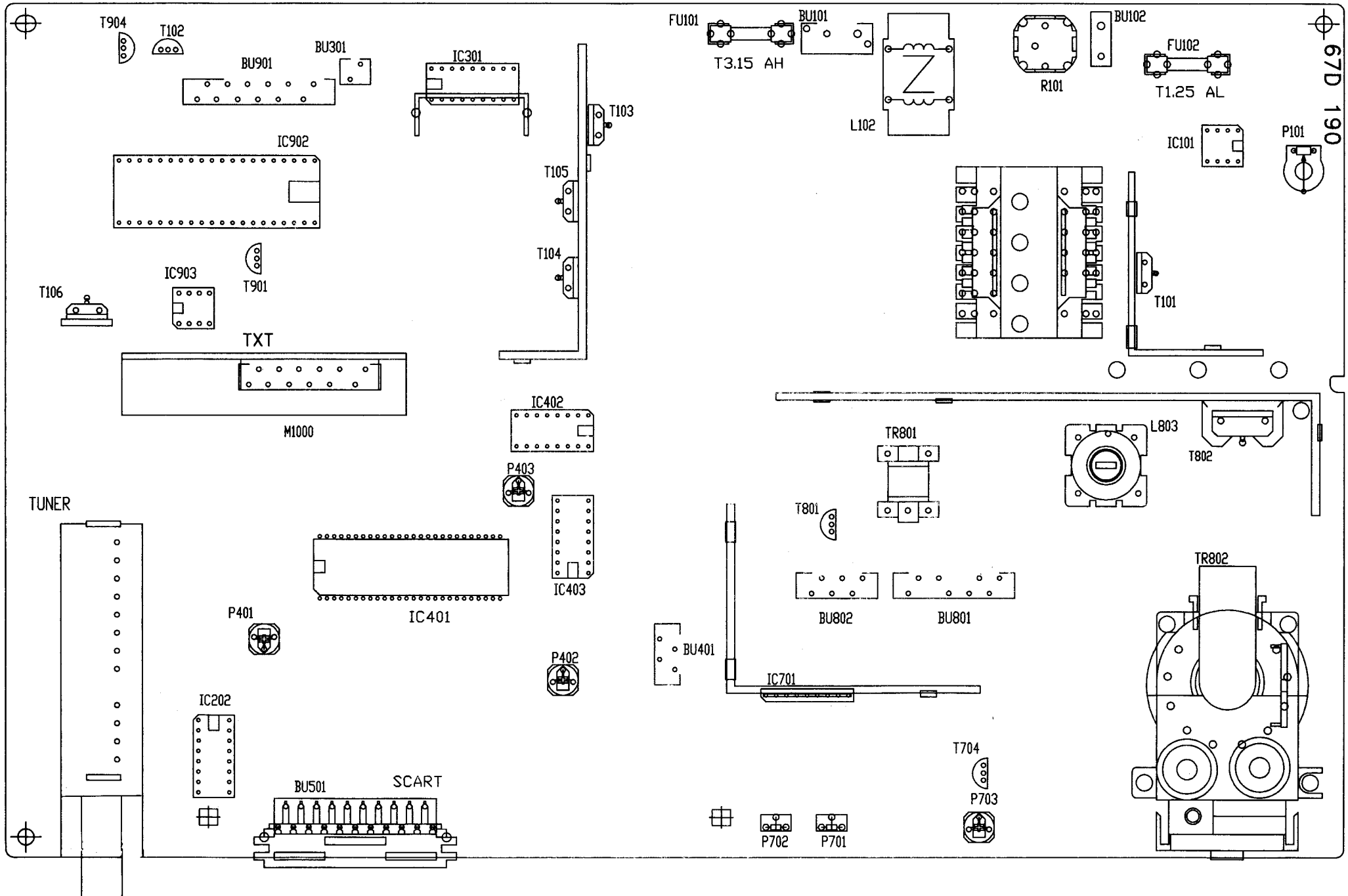
TELETEXT MODULE



CRT MODULE


CRT – BOARD
ST1201
ST1202
Focus
+UB
+8V
Fuse
R1225 depends on CRT and DST.
All diodes with * mark are IN4148.
C1217 and C1218 may not be inserted.


AR-GE 73Z193-02


67D 190
T904
T102
BU901
BU301
IC301
FU101
T3.15 AH
BU101
L102
R101
BU102
FU102
T1.25 AL
IC902
T103
T105
T104
IC101
P101
IC903
T901
T106
T101
TXT
M1000
IC402
TR801
L803
T802
P403
T801
TUNER
IC403
IC401
TR802
P401
BU802
BU801
BU401
P402
IC701
IC202
T704
BU501
SCART
P703
P702
P701

SERVICE ADJUSTMENTS

SUPPLY VOLTAGE ADJUSTMENT:

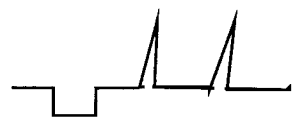
Connect the digital voltmeter to the D106 diode or R805 resistance while all the controls are at their minimum positions, adjust P101 to 123± 0.5V for 21"sets, 125V± 0.5V for 20" sets and 120V±0.5 for 14" sets.

GEOMETRY ADJUSTMENT:

Adjust vertical amplitude via P701 and vertical centering via P702, horizontal centering and horizontal amplitude via P403, L803.

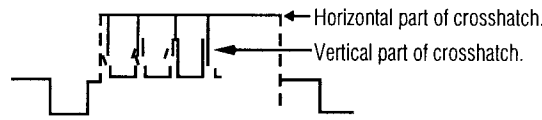
IF ADJUSTMENT:

Apply a cross hatch pattern to the set.
Connect the oscilloscope to the mid point of T406.
Adjust the FI407 coil until you obtain the pattern shown in the figure below.



SHARPNESS ADJUSTMENT:

Apply a cross hatch pattern to the set.
Connect the oscilloscope probe to one of the RGB outputs of the IC401 (8362). (Set the oscilloscope to 2V/DIV and 10uSec/Div Timebase) Align with P402 potentiometer until the vertical and horizontal peaks of the video signal become the same height.



AGC ADJUSTMENT:

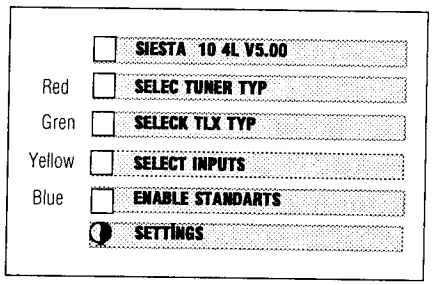
Select a crosshatch test pattern.
Connect the oscilloscope probe to AGC pin of tuner.
Adjust the P401 AGC potentiometer to the voltage 1 volt DC below the maximum value.

WHITE BALANCE ADJUSTMENT:

Select a proper test pattern for white balance adjustment.
Adjust the luminance level according to the following values:
AT 25% WHITE Y=8 ±2 NITS
AT75% WHITE Y=60±5 NITS
Adjust the low light via P1203 and P1205 potentiometers, the high light via P1201 and P1204 to 9300 K. The light level coordinates.
9300 K⇒X=285, Y=294

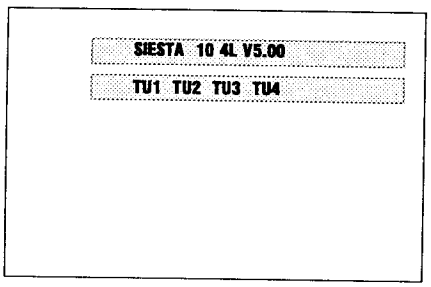
SERVICE MODE ADJUSTMENTS

Switch ON TV over mains switch while pressing UP/DOWN buttons on control unit.
Below shown SERVICE MENU appears on screen.



1. Tuner Selection

Push red fastext button an R/C Handsct. Below shown MENU will appear on screen.

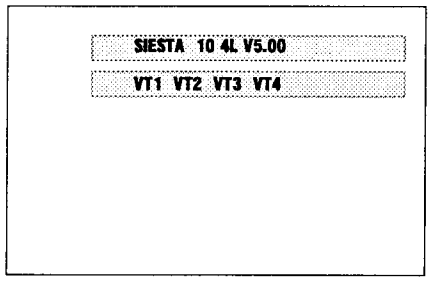


Seletc one of TU1, TU2, TU3 or TU4 with Volume +/- buttons Press " →|← " button. The colour of selected tuner type will change from purple to black.

TU 1: Philips UV816
Siemens H P 16
TU 2: Siemens HP 16 D2
TU 3: Telefunken
TU 4: Not defined

2.Teletext Language Selection

Push green fastext button on R/C Handset.
Below shown MENU will appear on screen.

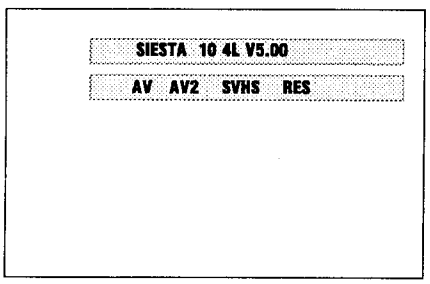


Select one of VT1, VT2, VT3 or VT4 with Volume +/- button. Pres " →|← " button. The colour of selected language grupe will turn from purple to black.

VT1: SDA 5243CI (Eng, Ger, Fre, Swe, Spa, Ita)
VT2: SDA 5243C2 (Ger, Swe, Che/Slo, Pol, Ser/Chr, Rom)
VT3: SDA 5243C3 (Eng, Ger, Fre, Spa, Ita, Tur)
VT4: SDA 5243 P/R (Gri

3. External connection selection

Push yellow fastext button on R/C Handset.
Below shown MENU will appear on screen.



Select the needed connection modes with Volume +/- button. Press " →|← " button for each selected connection mode.

The colour of selected mode/modes will change from purple to black

4. Tv Standart Selection

Push blue fastext button on R/C Handset.
Below shown MENU will appear on screen.

Select the needed TV standarts. Press " →|← " button for each selected TV standard. The colour of the standard/standards will change from purple to black

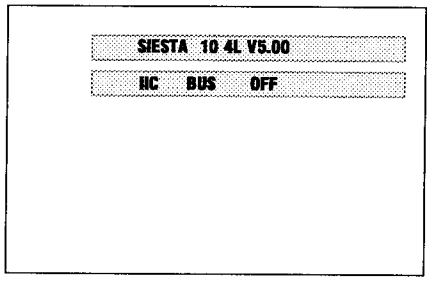
5. Settings

Push ◑ contrast button on R/C Handset.
Below shown MENU will appear on screen.

With this MENU Menu language (turkish or english) and Menu back ground colour can be selected. Press "→|←" button for each selected setting. The colours of the selected settings will change from purple to black.

6. I^2 C Bus OFF/ON

Push ☼ brightness button.
Below shown MENU will be displayed.



I^2 C Bus is off and "I^2C Bus OFF" is displayed. Pushing ☼ brightness button again switches I^2C Bus ON again.

CONVERGENCE ADJUSTMENTS

Note: Before attempting any convergence adjustments, the receiver should be operated for at least fifteen minutes.

• Centre Convergence Adjustment

1. Receive crosshatch pattern with a colour bar signal generator.
2. Adjust the BRIGHTNESS and CONTRAST Controls for well defined pattern.
3. Adjust two tabs of the 4-Pole Magnets to change the angle between them (See figure 16.) and superimpose red and blue vertical lines in the centrel area of the picture screen. (See figure 17.)
4. Turn the both tabs at the same time keeping the constant angle to superimpose red and blue horizontal lines at the centre of the screen. (See figure 17.)
5. Adjust two tabs of 6-Pole Magnets to superimpose red/blue line and green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 3,4,5 to ensure best convergence, the adjustment must be undertaken with great care because of the interaction between 4 and 6 pole magnets.

• Circumference Convergence Adjustment

1. Loosen the clamping screw of deflection yoke to allow the yoke to tilt.
2. Put a wedge as shown in figure 15 temporarily. (Do not remove cover paper on adhesive part of the wedge.)
3. Tilt front of the deflection yoke up or down to obtain better convergence in circumference. (See figure 17.) Push the mounted wedge into the space between picture tube and the yoke to fix the yoke temporarily.
4. Put other wedge into bottom space and remove the cover paper to stick.
5. Tilt front of the yoke right or left to obtain better convergence in circumference. (See figure 17.)
6. Keep the yoke position and put another wedge in either upper space. Remove cover paper and stick the wedge on picture tube to fix the yoke.
7. Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.
8. After fixing three wedges, recheck overall convergence. Tighten the screw firmly to fix the yoke and check the yoke is firm.
9. Stick 3 adhesive tapes on wedges.

CONVERGENCE COMPENSATOR

Compensators L462A and L462B are used to correct misconvergence (Red-Green) at the top center or bottom center on screen, when the misconvergence is still evident even though the yoke adjustment is tried.
Compensator L462C is also used to correct misconvergence (Vertical shift of Red or Blue) at four corners on screen.

1. To correct horizontal misconvergence (Red-Green), put compensator L462A on the yoke back (see figure right) to find a position for minimizing misconvergence. Mark the position and remove protective paper on the rear of L462A to stick it in place. Apply adhesives on both yoke and L462A.
2. To correct vertical misconvergence (Red-Green), put the tips of compensator L462B into either of the holes on the yoke core and apply adhesives.
3. To correct up or down shift of Red at top right or bottom right corner, put compensator L462C at point 1 or 2 on the picture tube (see figure right.) to find a position for minimizing misconvergence. Mark the position and remove protective paper on the rear of L462C to stick it in place.

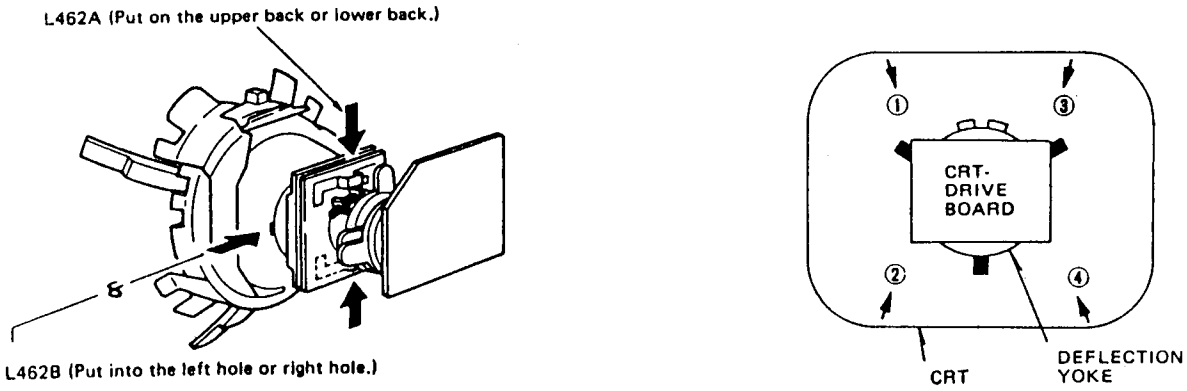


Figure 15.

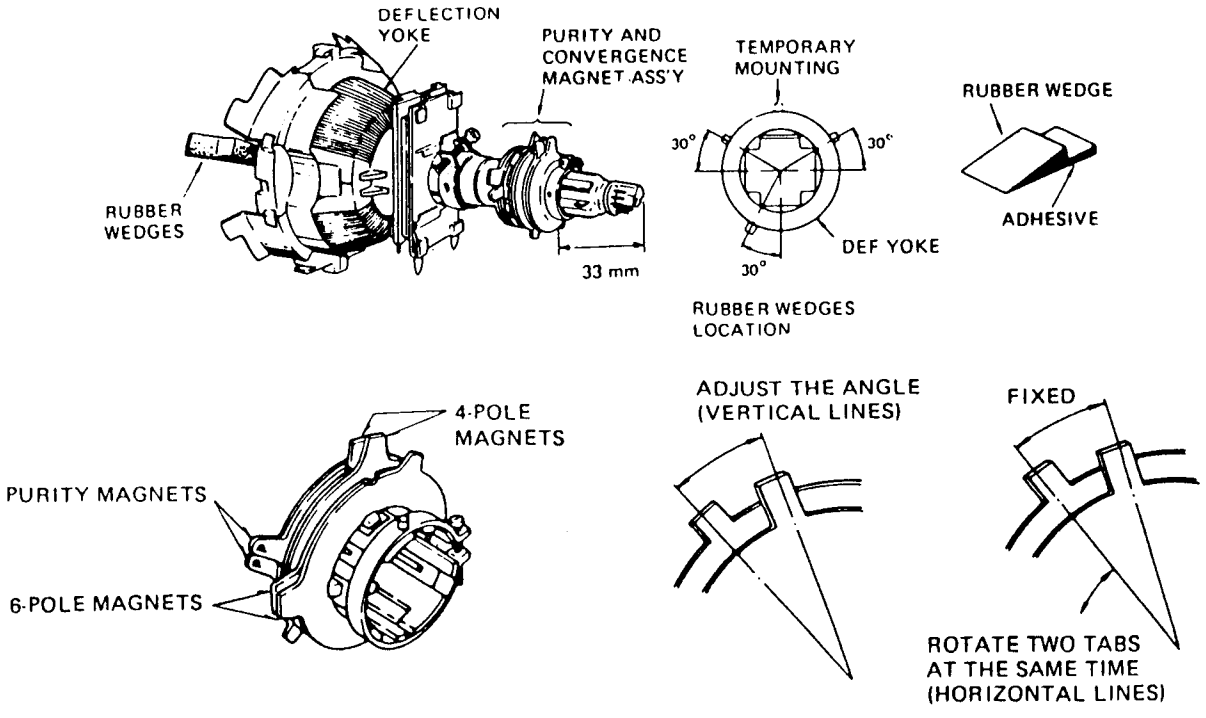
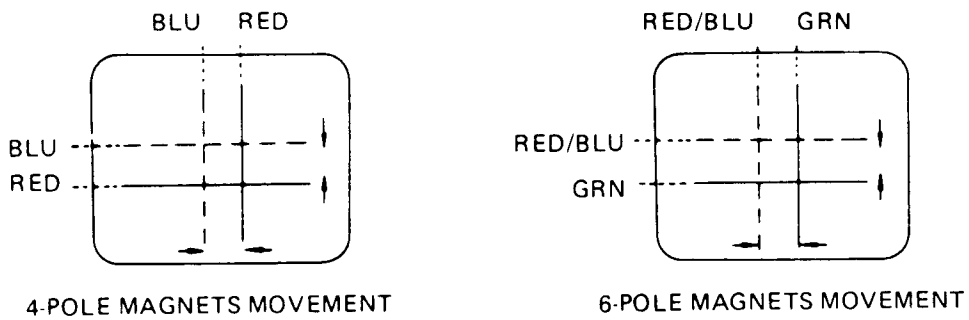


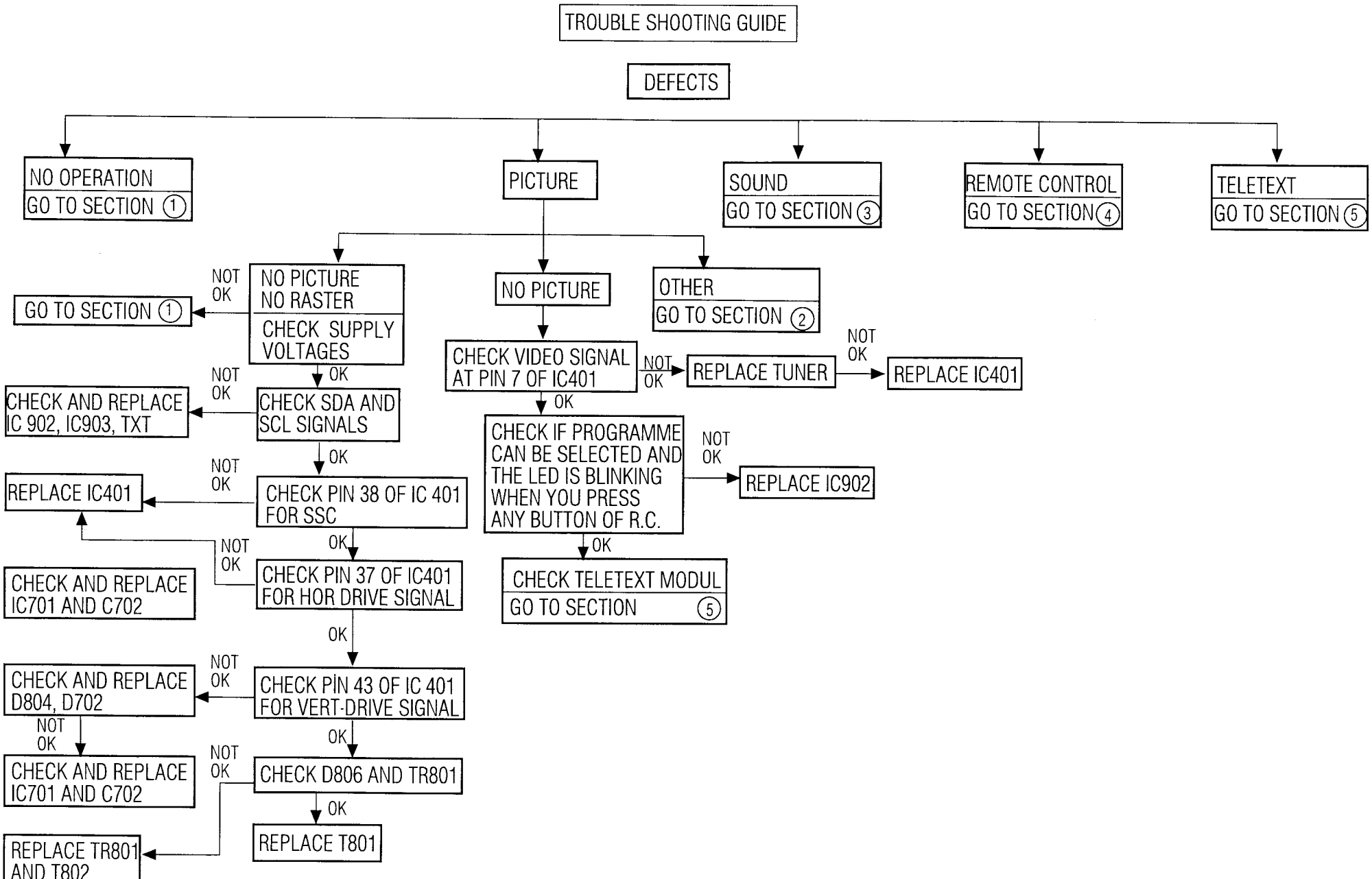
Figure 16.

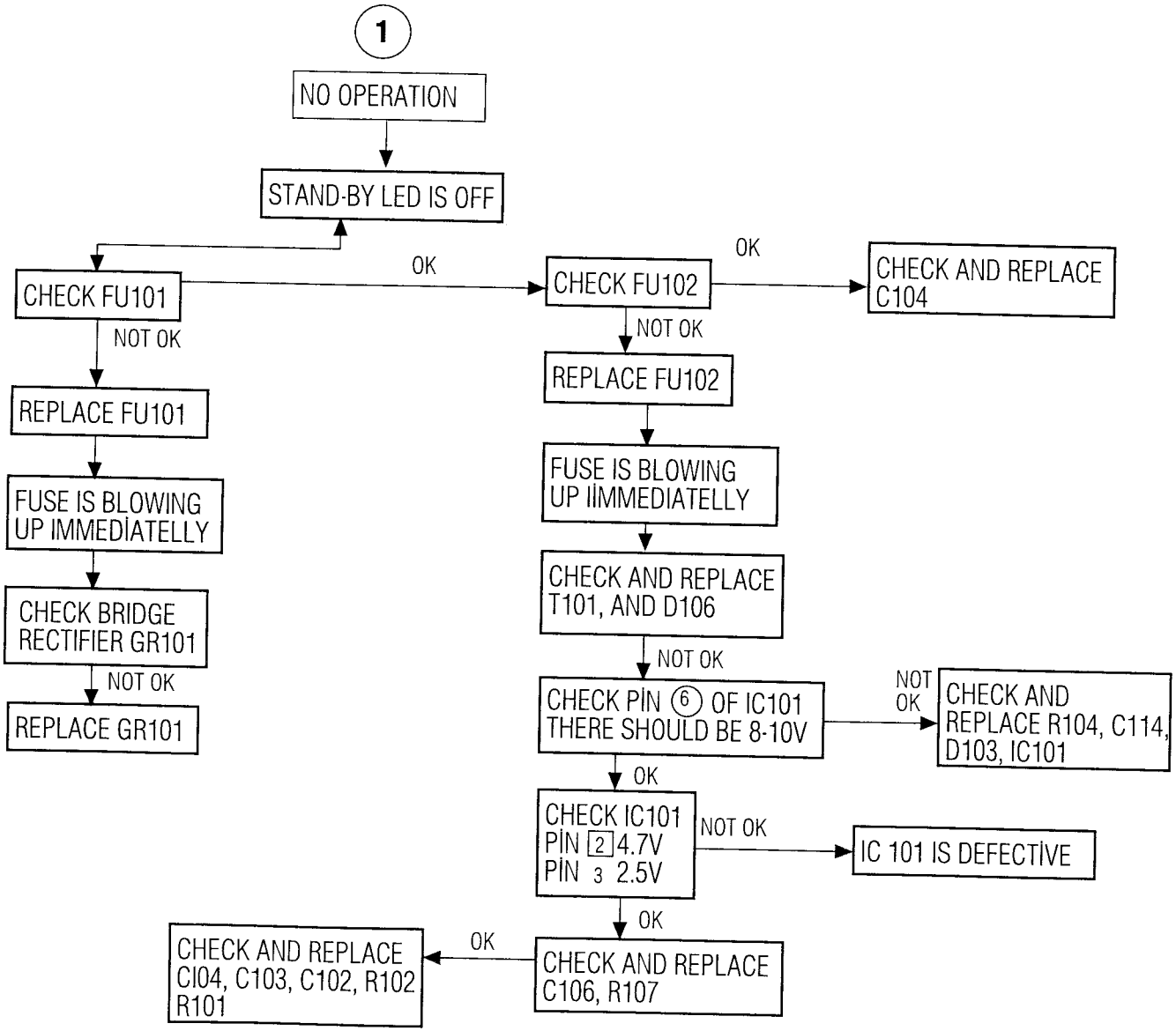


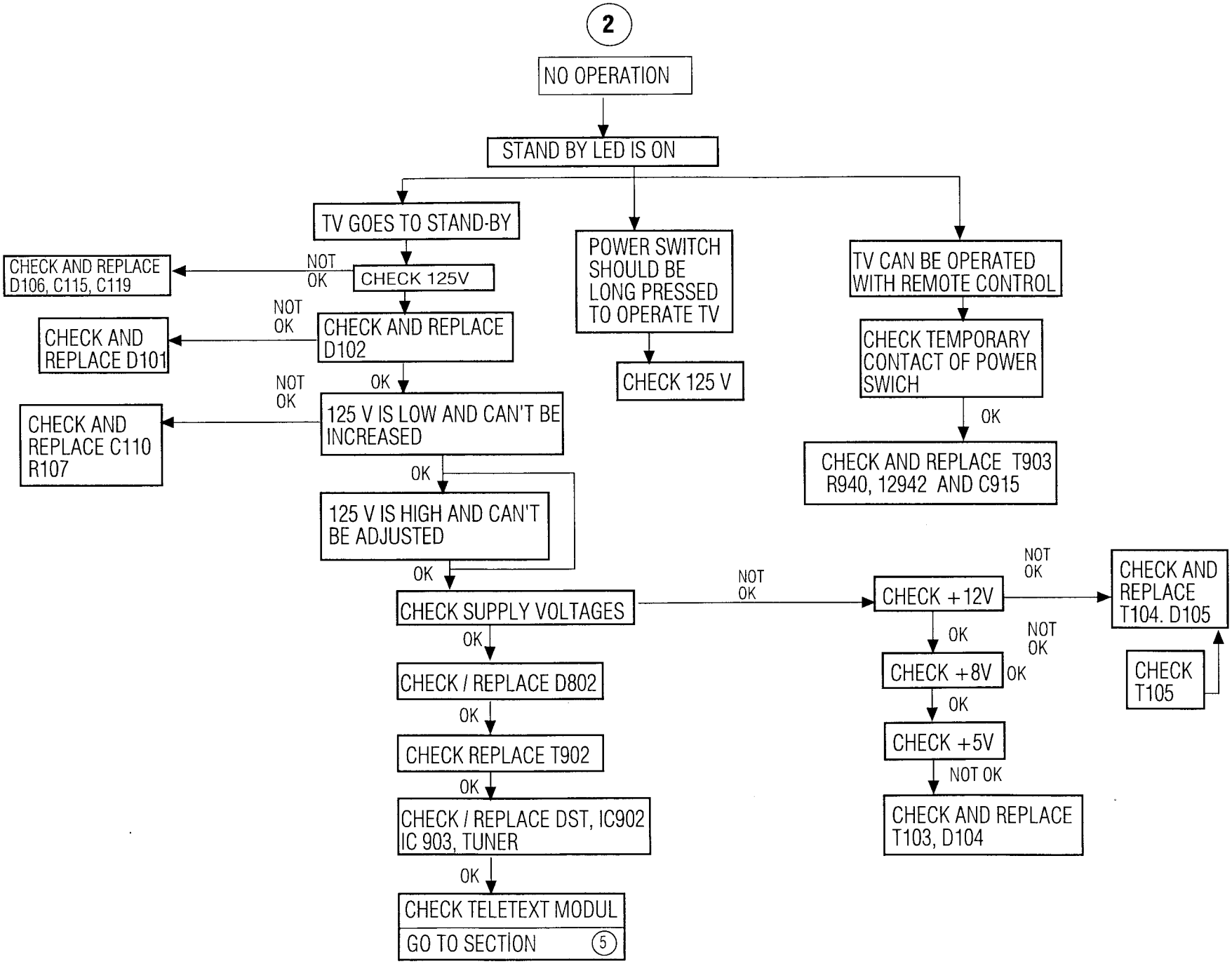
Centre Convergence by Convergence Magnets

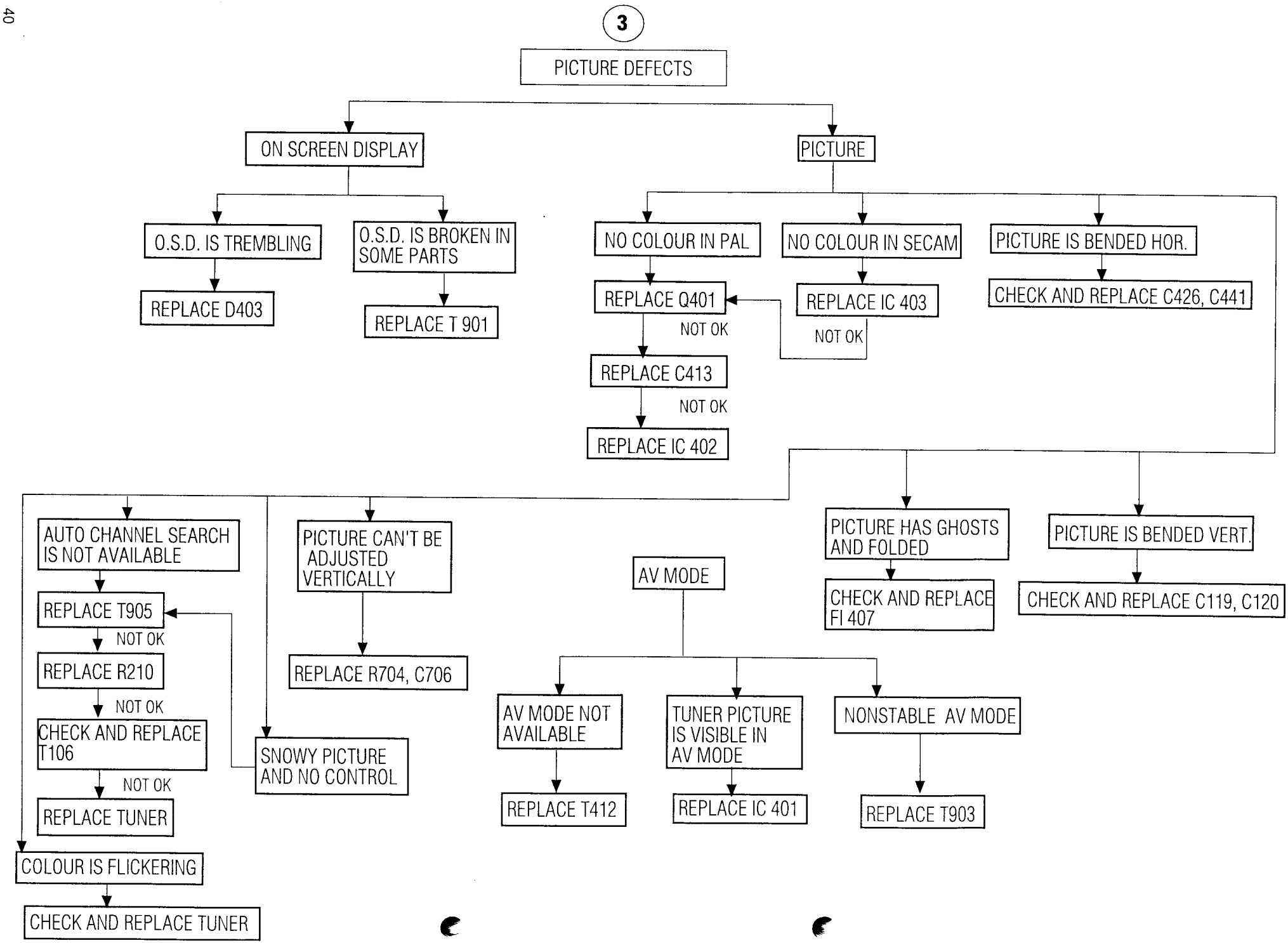
Circumference Convergence by DEF Yoke

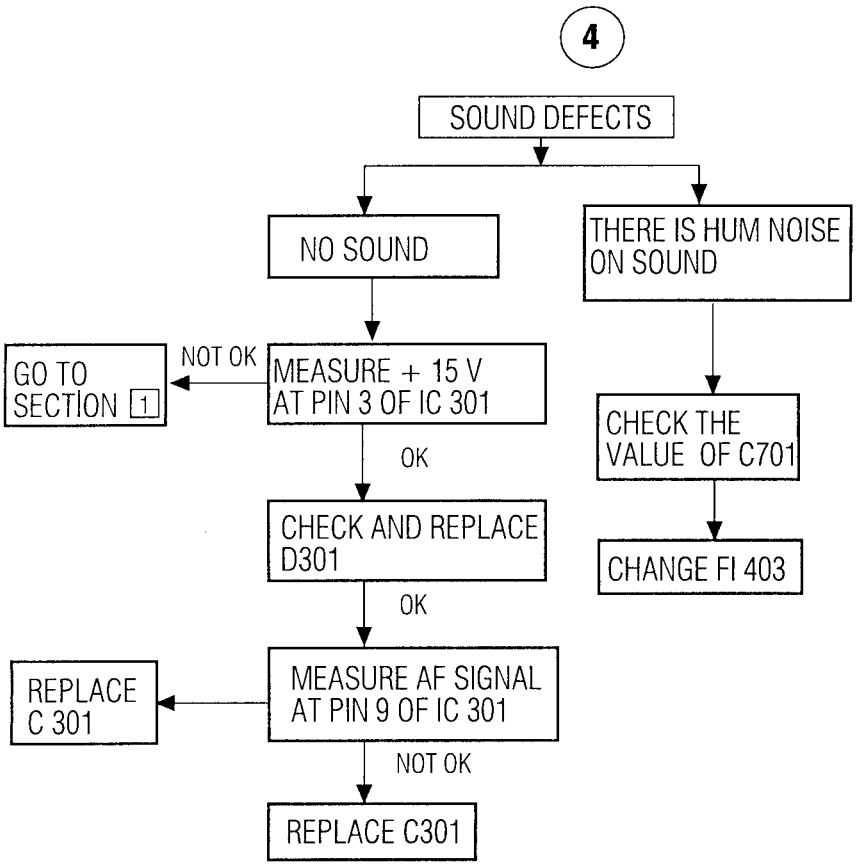
Dot Movement Pattern

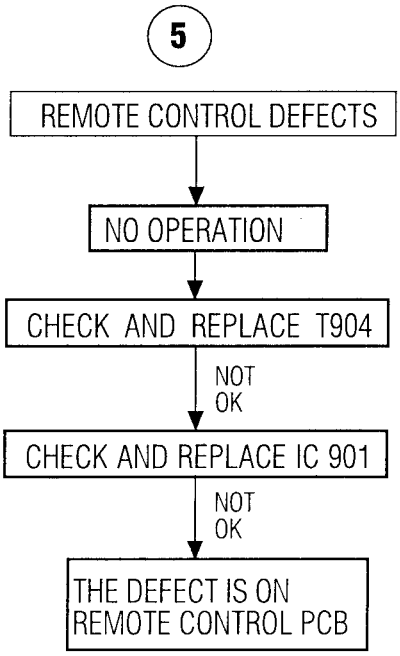

TROUBLE SHOOTING GUIDE
DEFECTS
NO OPERATION
GO TO SECTION (1)
PICTURE
SOUND
GO TO SECTION (3)
REMOTE CONTROL
GO TO SECTION (4)
TELETEXT
GO TO SECTION (5)
NO PICTURE
NO RASTER
CHECK SUPPLY VOLTAGES
NOT OK
GO TO SECTION (1)
OK
CHECK SDA AND SCL SIGNALS
NOT OK
CHECK AND REPLACE IC 902, IC903, TXT
OK
CHECK PIN 38 OF IC 401 FOR SSC
NOT OK
REPLACE IC401
OK
CHECK PIN 37 OF IC401 FOR HOR DRIVE SIGNAL
NOT OK
CHECK AND REPLACE IC701 AND C702
OK
CHECK PIN 43 OF IC 401 FOR VERT-DRIVE SIGNAL
NOT OK
CHECK AND REPLACE D804, D702
NOT OK
CHECK AND REPLACE IC701 AND C702
OK
CHECK D806 AND TR801
NOT OK
REPLACE TR801 AND T802
OK
REPLACE T801
NO PICTURE
CHECK VIDEO SIGNAL AT PIN 7 OF IC401
NOT OK
REPLACE TUNER
NOT OK
REPLACE IC401
OK
CHECK IF PROGRAMME CAN BE SELECTED AND THE LED IS BLINKING WHEN YOU PRESS ANY BUTTON OF R.C.
NOT OK
REPLACE IC902
OK
CHECK TELETEXT MODUL
GO TO SECTION (5)
OTHER
GO TO SECTION (2)

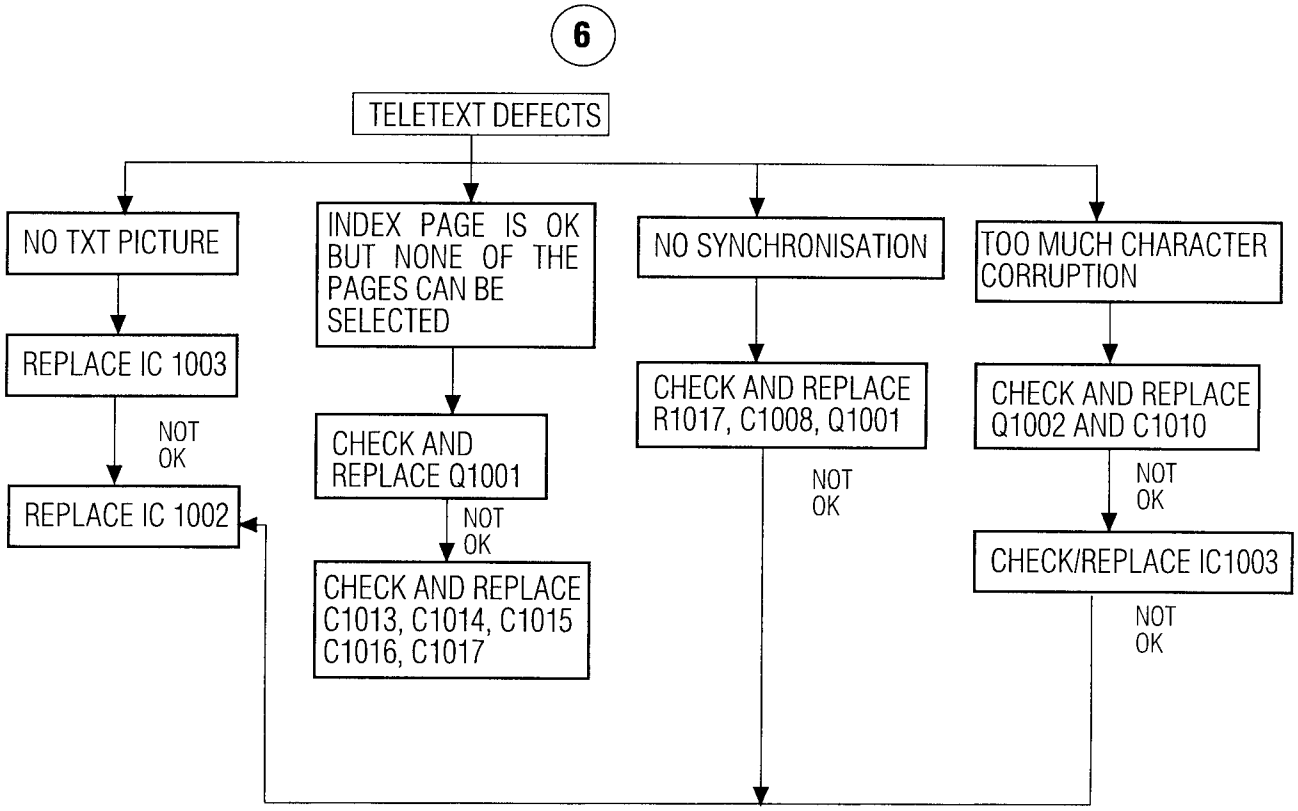

1
NO OPERATION
STAND-BY LED IS OFF
CHECK FU101
OK
CHECK FU102
OK
CHECK AND REPLACE C104
NOT OK
NOT OK
REPLACE FU101
REPLACE FU102
FUSE IS BLOWING UP IMMEDIATELLY
FUSE IS BLOWING UP IİMMEDIATELLY
CHECK BRIDGE RECTIFIER GR101
CHECK AND REPLACE T101, AND D106
NOT OK
NOT OK
REPLACE GR101
CHECK PİN 6 OF IC101 THERE SHOULD BE 8-10V
NOT OK
CHECK AND REPLACE R104, C114, D103, IC101
OK
CHECK IC101 PİN 2 4.7V PİN 3 2.5V
NOT OK
IC 101 IS DEFECTİVE
OK
OK
CHECK AND REPLACE CI04, C103, C102, R102 R101
CHECK AND REPLACE C106, R107


2
NO OPERATION
STAND BY LED IS ON
TV GOES TO STAND-BY
POWER SWITCH SHOULD BE LONG PRESSED TO OPERATE TV
TV CAN BE OPERATED WITH REMOTE CONTROL
CHECK AND REPLACE D106, C115, C119
NOT OK
CHECK 125V
CHECK AND REPLACE D101
NOT OK
CHECK AND REPLACE D102
OK
CHECK 125 V
CHECK TEMPORARY CONTACT OF POWER SWICH
OK
CHECK AND REPLACE C110 R107
NOT OK
125 V IS LOW AND CAN'T BE INCREASED
OK
CHECK AND REPLACE T903 R940, 12942 AND C915
125 V IS HIGH AND CAN'T BE ADJUSTED
OK
CHECK SUPPLY VOLTAGES
NOT OK
CHECK +12V
NOT OK
CHECK AND REPLACE T104. D105
OK
CHECK +8V
OK
NOT OK
CHECK T105
OK
CHECK +5V
NOT OK
CHECK AND REPLACE T103, D104
OK
CHECK / REPLACE D802
OK
CHECK REPLACE T902
OK
CHECK / REPLACE DST, IC902 IC 903, TUNER
OK
CHECK TELETEXT MODUL
GO TO SECTİON 5


3
PICTURE DEFECTS
ON SCREEN DISPLAY
PICTURE
O.S.D. IS TREMBLING
O.S.D. IS BROKEN IN SOME PARTS
REPLACE D403
REPLACE T 901
NO COLOUR IN PAL
NO COLOUR IN SECAM
PICTURE IS BENDED HOR.
REPLACE Q401
REPLACE IC 403
CHECK AND REPLACE C426, C441
NOT OK
NOT OK
REPLACE C413
NOT OK
REPLACE IC 402
AUTO CHANNEL SEARCH IS NOT AVAILABLE
PICTURE CAN'T BE ADJUSTED VERTICALLY
AV MODE
PICTURE HAS GHOSTS AND FOLDED
PICTURE IS BENDED VERT.
REPLACE T905
NOT OK
REPLACE R210
NOT OK
CHECK AND REPLACE T106
NOT OK
REPLACE TUNER
SNOWY PICTURE AND NO CONTROL
REPLACE R704, C706
CHECK AND REPLACE FI 407
CHECK AND REPLACE C119, C120
AV MODE NOT AVAILABLE
TUNER PICTURE IS VISIBLE IN AV MODE
NONSTABLE AV MODE
REPLACE T412
REPLACE IC 401
REPLACE T903
COLOUR IS FLICKERING
CHECK AND REPLACE TUNER


4
SOUND DEFECTS
NO SOUND
THERE IS HUM NOISE ON SOUND
GO TO SECTION 1
NOT OK
MEASURE + 15 V AT PIN 3 OF IC 301
OK
CHECK THE VALUE OF C701
CHECK AND REPLACE D301
CHANGE FI 403
OK
REPLACE C 301
MEASURE AF SIGNAL AT PIN 9 OF IC 301
NOT OK
REPLACE C301


5
REMOTE CONTROL DEFECTS
NO OPERATION
CHECK AND REPLACE T904
NOT OK
CHECK AND REPLACE IC 901
NOT OK
THE DEFECT IS ON REMOTE CONTROL PCB


6
TELETEXT DEFECTS
NO TXT PICTURE
REPLACE IC 1003
NOT OK
REPLACE IC 1002
INDEX PAGE IS OK BUT NONE OF THE PAGES CAN BE SELECTED
CHECK AND REPLACE Q1001
NOT OK
CHECK AND REPLACE C1013, C1014, C1015 C1016, C1017
NO SYNCHRONISATION
CHECK AND REPLACE R1017, C1008, Q1001
NOT OK
TOO MUCH CHARACTER CORRUPTION
CHECK AND REPLACE Q1002 AND C1010
NOT OK
CHECK/REPLACE IC1003
NOT OK

CHANNEL TABLE FOR STANDARD B/G (CCIR)

Channel number (display)	Channel design.	Centre frequency (MHz)	Oscillator frequency (MHz)	Division ratio PLL (decimal)
C01	AU 0	46.25	85.125	1.362
C02	K2	48.25	87.125	1.394
C03	K3	55.25	94.125	1.506
C04	K4	62.25	101.125	1.618
C05	K5	175.25	214.125	3.426
C06	K6	182.25	221.125	3.538
C07	K7	189.25	228.125	3.650
C08	K8	196.25	235.125	3.762
C09	K9	203.25	252.125	3.874
C10	K10	210.25	249.125	3.986
C11	K11	217.25	256.125	4.098
C12	K12	224.25	263.125	4.210
C13	A	53.75	92.625	1.482
C14	B	62.25	101.125	1.618
C15	C	82.25	121.125	1.938
C16	D	175.25	214.125	3.426
C17	E	183.75	222.625	3.562
C18	F	192.25	231.125	3.698
C19	G	201.25	240.125	3.842
C20	H	210.25	249.125	3.986
C21	K21	475.25	510.125	8,162
C22	K22	479.25	518.125	8,290
C23	K23	487.25	526.125	8,418
C24	K24	495.25	534.125	8,546
C25	K25	503.25	542.125	8,674
C26	K26	511.25	550.125	8,802
C27	K27	519.25	558.125	8,930
C28	K28	527.25	566.125	9,058
C29	K29	535.25	574.125	9,186
C30	R30	543.25	582.125	9,314
C31	R31	551.25	590.125	9,442
C32	K32	559.25	598.125	9,570
C33	K33	567.25	606.125	9,698
C34	K34	575.25	614.125	9,826
C35	K35	583.25	622.125	9,954
C36	K36	591.25	630.125	10,082
C37	K37	599.25	638.125	10,210
C38	K38	607.25	646.125	10,338
C39	K39	615.25	654.125	10,466
C40	K40	623.25	662.125	10,594
C41	K41	631.25	670.125	10,722
C42	K42	639.25	678.125	10,850
C43	K43	647.25	686.125	10,978
C44	K44	655.25	694.125	11,106
C45	K45	663.25	702.125	11,234
C46	K46	671.25	710.125	11,362
C47	K47	679.25	718.125	11,490
C48	K48	687.25	726.125	11,618
C49	K49	695.25	734.125	11,746
C50	K50	703.25	742.125	11,874
C51	K51	711.25	750.125	12,002
C52	K52	719.25	758.125	12,130
C53	K53	727.25	766.125	12,258
C54	K54	735.25	774.125	12,386
C55	K55	743.25	782.125	12,514
C56	K56	751.25	790.125	12,642
C57	K57	759.25	798.125	12,770
C58	K58	767.25	806.125	12,898
C59	K59	775.25	814.125	13.026
C60	K60	783.25	822.125	13.154

Channel number (display)	Channel design.	Centre frequency (MHz)	Oscillator frequency (MHz)	Division ratio PLL (decimal)
C61	K61	791.25	830.125	13.282
C62	K62	799.25	838.125	13.410
C63	K63	807.25	846.125	13.538
C64	K64	815.25	854.125	13.666
C65	K65	823.25	862.125	13.794
C66	K66	831.25	870.125	13.922
C67	K67	839.25	878.125	14.050
C68	K68	847.25	886.125	14.178
C69	K69	855.25	894.125	14.306
C70	EX	863.25	902.125	14.434
C71	EX	871.25	910.125	14.562
C72	EX	879.25	918.125	14.690
C73	EX	887.25	926.125	14.818
C74	EX	69.25	108.125	1.730
C75	EX	76.25	115.125	1.842
C76	EX	83.25	122.125	1.954
C77	EX	90.25	129.125	2.066
C78	EX	97.25	136.125	2.178
C79	201	59.25	98.125	1.570
C80	501	93.25	132.125	2.114
S01	S1	105.25	144.125	2.306
S02	S2	112.25	151.125	2.418
S03	S3	119.25	158.125	2.530
S04	S4	126.25	165.125	2.642
S05	S5	133.25	172.125	2.754
S06	S6	140.25	179.125	2.866
S07	S7	147.25	186.125	2.978
S08	S8	154.25	193.125	3.090
S09	S9	161.25	200.125	3.202
S10	S10	168.25	207.125	3.314
S11	S11	231.25	270.125	4.322
S12	S12	238.25	277.125	4.434
S13	S13	245.25	284.125	4.546
S14	S14	252.25	291.125	4.658
S15	S15	259.25	298.125	4.770
S16	S16	266.25	305.125	4.882
S17	S17	273.25	312.125	4.994
S18	S18	280.25	319.125	5.106
S19	S19	287.25	326.125	5.218
S20	S20	294.25	333.125	5.330
S21	S21	303.25	342.125	5.474
S22	S22	311.25	350.125	5.602
S23	S23	319.25	358.125	5.730
S24	S24	327.25	366.125	5.858
S25	S25	335.25	374.125	5.986
S26	S26	343.25	382.125	6.050
S27	S27	351.25	390.125	6.242
S28	S28	359.25	398.125	6.370
S29	S29	367.25	406.125	6.498
S30	S30	375.25	414.125	6.626
S31	S31	383.25	422.125	6.754
S32	S32	391.25	430.125	6.882
S33	S33	399.25	438.125	7.010
S34	S34	407.25	446.125	7.138
S35	S35	415.25	454.125	7.266
S36	S36	423.25	462.125	7.394
S37	S37	431.25	470.125	7.522
S38	S38	439.25	478.125	7.650
S39	S39	447.25	486.125	7.778
S40	S40	455.25	494.125	7.906
S41	S41	463.25	502.125	8.034

CHANNEL FOR STANDARD I+

Channel number (display)	Channel design.	Centre frequency (MHz)	Oscillator frequency (MHz)	Division ratio PLL (decimal)
C01	R1	49.75	88.625	1,362
C02	R2	59.25	98.125	1,570
C03	R3	77.25	116.125	1,858
C04	R4	85.25	124.125	1,986
C05	R5	93.25	132.125	2,114
C06	R6	175.25	214.125	3,426
C07	R7	183.25	222.125	3,554
C08	R8	191.25	230.125	3,682
C09	R9	199.25	238.125	3,810
C10	R10	207.25	246.125	3,938
C11	R11	215.25	254.125	4,066
C12	R12	223.25	262.125	4,194
C21	R21	471.25	510.125	8,162
C22	R22	469.25	518.125	8,290
C23	R23	487.25	526.125	8,418
C24	R24	495.25	534.125	8,546
C25	R25	503.25	542.125	8,674
C26	R26	511.25	550.125	8,802
C27	R27	519.25	558.125	8,930
C28	R28	527.25	566.125	9,058
C29	R29	535.25	574.125	9,186
C30	R30	543.25	582.125	9,314
C31	R31	551.25	590.125	9,442
C32	R32	559.25	793.125	9.570
C33	R33	567.25	606.125	9,698
C34	R34	575.25	614.125	9,826
C35	R35	583.25	622.125	9,954
C36	R36	591.25	630.125	10,082
C37	R37	599.25	638.125	10,210
C38	R38	607.25	646.125	10,338
C39	R39	615.25	654.125	10,466
C40	R40	623.25	662.125	10,594
C41	R41	631.25	670.125	10,722
C42	R42	639.25	678.125	10,850
C43	R43	647.25	686.125	10,978
C44	R44	655.25	694.125	11,106
C45	R45	663.25	702.125	11,234
C46	R46	671.25	710.125	11,362
C47	R47	679.25	718.125	11,490
C48	R48	687.25	726.125	11,618
C49	R49	695.25	734.125	11,746
C50	R50	703.25	742.125	11,874
C51	R51	711.25	750.125	12,002
C52	R52	719.25	758.125	12,130
C53	R53	727.25	766.125	12,258
C54	R54	735.25	774.125	12,386
C55	R55	743.25	782.125	12,514
C56	R56	751.25	790.125	12,642
C57	R57	759.25	798.125	12,770
C58	R58	767.25	806.125	12,898
C59	R59	775.25	814.125	13,026
C60	R60	783.25	822.125	13,154

Channel number (display)	Channel design.	Centre frequency (MHz)	Oscillator frequency (MHz)	Division ratio PLL (decimal)
C61	R61	791.25	830.125	13,282
C62	R62	799.25	838.125	13,410
C63	R63	807.25	846.125	13,538
C64	R64	815.25	854.125	13,666
C65	R65	823.25	862.125	13,794
C66	R66	831.25	870.125	13,922
C67	R67	839.25	878.125	14,050
C68	R68	847.25	886.125	14.178
C69	R69	855.25	894.125	14,306
C70	170	863.25	902.125	14,434
C71	171	871.25	910.125	14,562
C72	172	879.25	918.125	14,690
C73	173	887.25	926.125	14,818
S01	S1	103.25	142.125	2.274
S02	S1	111.25	150.125	2,402
S03	S3	119.25	158.125	2,530
S04	S4	127.25	166.125	2,658
S05	S5	135.25	174.125	2,786
S06	S6	143.25	182.125	2,914
S07	S7	151.25	190.125	3,042
S08	S8	159.25	198.125	3,170
S09	S9	167.25	206.125	3,298
S10	S10	231.25	270.125	4,322
S11	S11	239.25	278.125	4,450
S12	S12	247.25	286.125	4,578
S13	S13	255.25	294.125	4,706
S14	S14	263.25	302.125	4,834
S15	S15	271.25	310.125	4,962
S16	S16	279.25	318.125	5,090
S17	S17	287.25	325.125	5,218
S18	S18	295.25	334.125	5,346
S19	S19	303.25	342.125	5,474
S11	S11	311.25	350.125	5,602
S23	S23	319.25	358.125	5,730
S24	S24	327.25	366.125	5,858
S25	S25	335.25	374.125	5,986
S26	S26	343.25	382.125	6,050
S27	S27	351.25	390.125	6,242
S28	S28	359.25	398.125	6,370
S29	S29	367.25	406.125	6,498
S30	S30	375.25	414.125	6,626
S31	S31	383.25	422.125	6,754
S32	S32	391.25	430.125	6,882
S33	S33	399.25	438.125	7,010
S34	S34	407.25	446.125	7,138
S35	S35	415.25	454.125	7,266
S36	S36	423.25	462.125	7,394
S37	S37	431.25	470.125	7,522
S38	S38	439.25	478.125	7,650
S39	S39	447.25	486.125	7,778
S40	S40	455.25	494.125	7,906
S41	S41	463.25	502.125	8,034

CHANNEL TABLE FOR STANDARD D/K (OIRT)

Channel number (display)	Channel design.	Centre frequency (MHz)	Oscillator frequency (MHz)	Division ratio PLL (decimal)
C01	R1	49.75	88.625	1.418
C02	R2	59.25	98.125	1.570
C03	R3	77.25	116.125	1.858
C04	R4	85.25	124.125	1.986
C05	R5	93.25	132.125	2.114
C06	R6	175.25	214.125	3.426
C07	R7	183.25	222.125	3.554
C08	R8	191.25	230.125	3.682
C09	R9	199.25	238.125	3.810
C10	R10	207.25	246.125	3.938
C11	R11	215.25	254.125	4.066
C12	R12	223.25	262.125	4.194
C21	R21	471.25	510.125	8,162
C22	R22	479.25	518.125	8,290
C23	R23	487.25	526.125	8,418
C24	R24	495.25	534.125	8,546
C25	R25	503.25	542.125	8,674
C26	R26	511.25	550.125	8,802
C27	R27	519.25	558.125	8,930
C28	R28	527.25	566.125	9,058
C29	R29	535.25	574.125	9,186
C30	R30	543.25	582.125	9,314
C31	R31	551.25	590.125	9,442
C32	R32	559.25	598.125	9.570
C33	R33	567.25	606.125	9,698
C34	R34	575.25	614.125	9,826
C35	R35	583.25	622.125	9,954
C36	R36	591.25	630.125	10,082
C37	R37	599.25	638.125	10,210
C38	R38	607.25	646.125	10,338
C39	R39	615.25	654.125	10,466
C40	R40	623.25	662.125	10,594
C41	R41	631.25	670.125	10,722
C42	R42	639.25	678.125	10,850
C43	R43	647.25	686.125	10,978
C44	R44	655.25	694.125	11,106
C45	R45	663.25	702.125	11,234
C46	R46	671.25	710.125	11,362
C47	R47	679.25	718.125	11,490
C48	R48	687.25	726.125	11,618
C49	R49	695.25	734.125	11,746
C50	R50	703.25	742.125	11,874
C51	R51	711.25	750.125	12,002
C52	R52	719.25	758.125	12,130
C53	R53	727.25	766.125	12,258
C54	R54	735.25	774.125	12,386
C55	R55	743.25	782.125	12,514
C56	R56	751.25	790.125	12,642
C57	R57	759.25	798.125	12,770
C58	R58	767.25	806.125	12,898
C59	R59	775.25	814.125	13.026
C60	R60	783.25	822.125	13.154
C61	K61	791.25	830.125	13.282
C62	K62	799.25	838.125	13.410
C63	K63	807.25	846.125	13.538
C64	K64	815.25	854.125	13.666
C65	K65	823.25	862.125	13.794

Channel number (display)	Channel design.	Centre frequency (MHz)	Oscillator frequency (MHz)	Division ratio PLL (decimal)
C61	R61	791.25	830.125	13.282
C62	R62	799.25	838.125	13.410
C63	R63	807.25	846.125	13.538
C64	R64	815.25	854.125	13.666
C65	R65	823.25	862.125	13.794
C66	R66	831.25	870.125	13.922
C67	R67	839.25	878.125	14.050
C68	R68	847.25	886.125	14.178
C69	R69	855.25	894.125	14.306
S01	S1	103.25	142.125	2.274
S02	S2	111.25	150.125	2.402
S03	S3	119.25	158.125	2.530
S04	S4	127.25	166.125	2.658
S05	S5	135.25	174.125	2.786
S06	S6	143.25	182.125	2.914
S07	S7	151.25	190.125	3.042
S08	S8	159.25	198.125	3.170
S09	S9	167.25	206.125	3.298
S10	S10	231.25	270.125	4.322
S11	S11	239.25	278.125	4.450
S12	S12	247.25	286.125	4.578
S13	S13	255.25	294.125	4.706
S14	S14	263.25	302.125	4.834
S15	S15	271.25	310.125	4.962
S16	S16	279.25	318.125	5.090
S17	S17	287.25	326.125	5.218
S18	S18	295.25	334.125	5.346
S19	S19	303.25	342.125	5.474
S22	S22	311.25	350.125	5.602
S23	S23	319.25	358.125	5.730
S24	S24	327.25	366.125	5.858
S25	S25	335.25	374.125	5.986
S26	S26	343.25	382.125	6.050
S27	S27	351.25	390.125	6.242
S28	S28	359.25	398.125	6.370
S29	S29	367.25	406.125	6.498
S30	S30	375.25	414.125	6.626
S31	S31	383.25	422.125	6.754
S32	S32	391.25	430.125	6.882
S33	S33	399.25	438.125	7.010
S34	S34	407.25	446.125	7.138
S35	S35	415.25	454.125	7.266
S36	S36	423.25	462.125	7.394
S37	S37	431.25	470.125	7.522
S38	S38	439.25	478.125	7.650
S39	S39	447.25	486.125	7.778
S40	S40	455.25	494.125	7.906
S41	S41	463.25	502.125	8.034

CHANNEL TABLE FOR STANDARD L

Channel number (display)	Channel design.	Centre frequency (MHz)	Oscillator frequency (MHz)	Division ratio PLL (decimal)
C02	L2	55.75	90.125	1.442
C03	L3	60.50	94.875	1.518
C04	L4	63.75	98.125	1.570
C05	L5	176.00	214.875	3.438
C06	L6	184.00	222.875	3.566
C07	L7	192.00	230.875	3.694
C08	L8	200.00	238.875	3.822
C09	L9	208.00	246.875	3.950
C10	L10	216.00	254.875	4.078
C11	LUX	189.25	228.125	3.650
C12	K6	182.25	221.125	3.538
C13	K8	196.25	235.125	3.762
C14	K10	210.25	249.125	3.986
C21	K21	471.25	510.125	8,162
C22	K22	479.25	518.125	8,290
C23	K23	487.25	526.125	8,418
C24	K24	495.25	534.125	8,546
C25	K25	503.25	543.025	8,674
C26	K26	511.25	550.125	8,802
C27	K27	519.25	558.125	8,930
C28	K28	527.25	566.125	9,058
C29	K29	535.25	574.125	9,186
C30	K30	543.25	583.025	9,314
C31	K31	551.25	590.125	9,442
C32	K32	559.25	598.125	9,570
C33	K33	567.25	606.125	9,698
C34	K34	575.25	614.125	9,826
C35	K35	583.25	623.025	9,954
C36	K36	591.25	630.125	10,082
C37	K37	599.25	638.125	10,210
C38	K38	607.25	646.125	10,338
C39	K39	615.25	654.125	10,466
C40	K40	623.25	663.025	10,594
C41	K41	631.25	670.125	10,722
C42	K42	639.25	678.125	10,850
C43	K43	647.25	686.125	10,978
C44	K44	655.25	694.125	11,106
C45	K45	663.25	702.125	11,234
C46	K46	671.25	710.125	11,362
C47	K47	679.25	718.125	11,490
C48	K48	687.25	726.125	11,618
C49	K49	695.25	734.125	11,746
C50	K50	703.25	742.125	11,874
C51	K51	711.25	750.125	12,002
C52	K52	719.25	758.125	12,130
C53	K53	727.25	766.125	12,258
C54	K54	735.25	774.125	12,386
C55	K55	743.25	782.125	12,514
C56	K56	751.25	790.125	12,642
C57	K57	759.25	798.125	12,770
C58	K58	767.25	806.125	12,898
C59	K59	775.25	814.125	13.026
C60	K60	783.25	822.125	13.154
C61	K61	791.25	830.125	13.282
C62	K62	799.25	838.125	13.410
C63	K63	807.25	846.125	13.538
C64	K64	815.25	854.125	13.666
C65	K65	823.25	862.125	13.794
C66	K66	831.25	870.125	13.922
C67	K67	839.25	878.125	14.050
C68	K68	847.25	886.125	14.178
C69	K69	855.25	894.125	14.306
C70	EX	863.25	902.125	14.434
S01	B	116.75	155.625	2.490
S02	C	128.75	167.625	2.682
S03	D	140.75	179.625	2.874
S04	E	152.75	191.625	3.066
S05	F	164.75	203.625	3.258
S06	G	176.75	215.625	3.450
S07	S	188.75	227.625	3.642
S08	I	200.75	239.625	3.834
S09	J	212.75	251.625	4.026
S10	K	224.75	263.625	4.218
S11	L	236.75	275.625	4.410
S12	M	248.75	287.625	4.602
S13	N	260.75	299.625	4.794
S14	O	272.75	311.625	4.986
S15	P	284.75	323.625	5.178
S16	Q	296.75	335.625	5.370
S21	S21	303.25	343.025	5.474
S22	S22	311.25	350.125	5.602
S23	S23	319.25	358.125	5.730
S24	S24	327.25	366.125	5.858
S25	S25	335.25	374.125	5.986
S26	S26	343.25	383.025	6.050
S27	S27	351.25	390.125	6.242
S28	S28	359.25	398.125	6.370
S29	S29	367.25	406.125	6.498
S30	S30	375.25	414.125	6.626
S31	S31	383.25	423.025	6.754
S32	S32	391.25	430.125	6.882
S33	S33	399.25	438.125	7.010
S34	S34	407.25	446.125	7.138
S35	S35	415.25	454.125	7.266
S36	S36	423.25	463.025	7.394
S37	S37	431.25	470.125	7.522
S38	S38	439.25	478.125	7.650
S39	S39	447.25	486.125	7.778
S40	S40	455.25	494.125	7.906
S41	S41	463.25	503.025	8.034

SPARE PARTS LIST FOR 10.4 CHASSIS

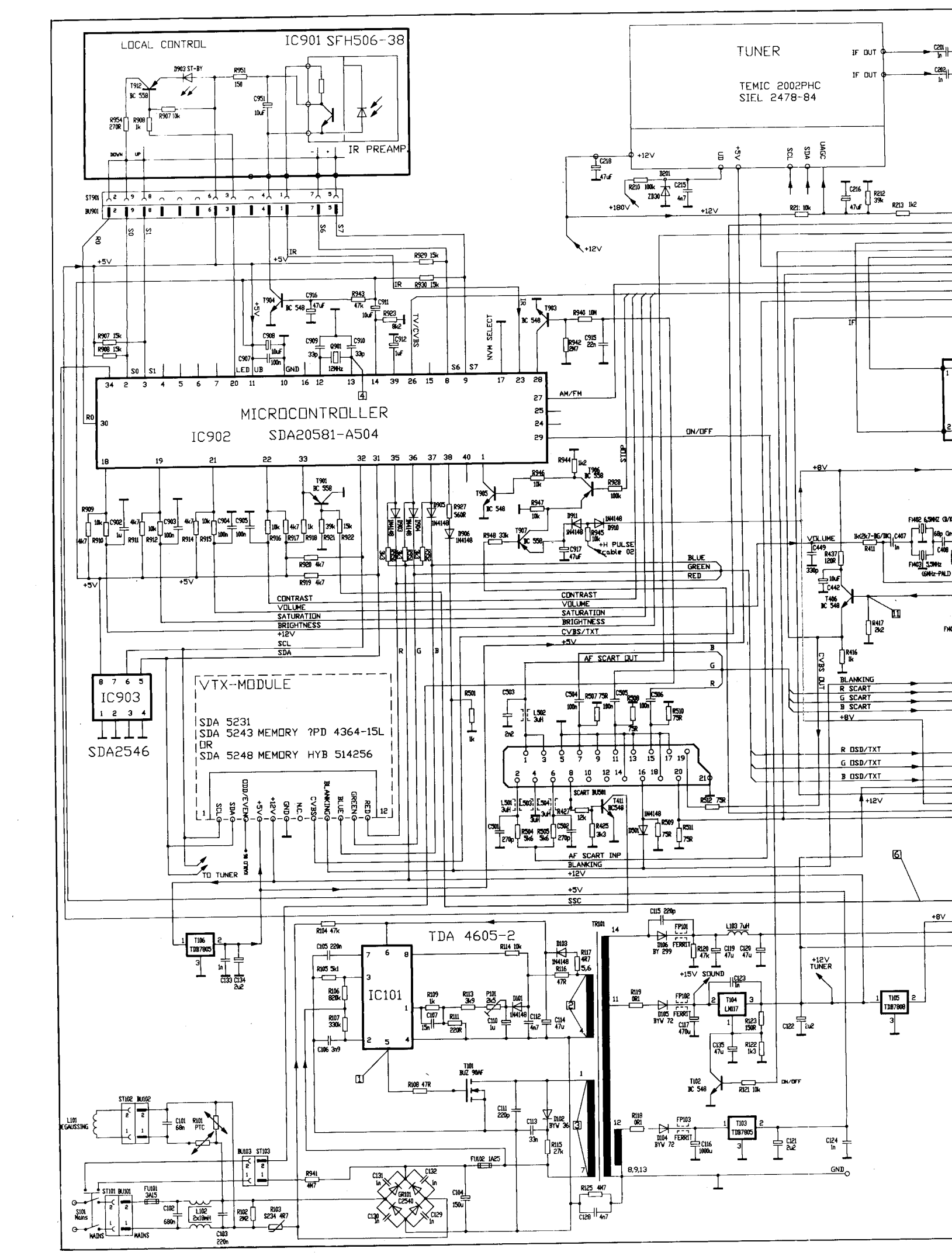
BEKO NO	DESCRIPTION	POS01	POS02	POS03	POS04	POS05
010712	MAINS SWITCH 1753-004					
010840-01	TACT SW LONG STEN 2LEG					
030306	HOLDER-FUSE	FU101	FU102			
031019	CON.HOUSING X2.5TMK2210GREY	BU801				
031228-01	SCART SOCKET-II	BU501				
031706	CONN.HOUSING 3P/2	BU103				
031813	CON.HOUSING X2.5TMK 2202 GRAY	BU301				
031821	CON.HOUSING X2.5TMK 2204 GRAY	BU401				
031829	CON.HOUSING X2.5TMK 2206 GRAY	BU802				
031843	CONN.HOUSING X2209 BLACK	BU901				
031858	CONN.HOUSING X2004 GREY	ST1201				
031862	CONN.HOUSING X2005 GREY	ST1202				
031960	CRT SOCKET (B10227 TYPE)					
031962	CON.12 PLUG	ST1001				
031976	CON.HOUSING 2P	BU101	BU102			
032568	IC SOCKET 40PIN	IC902				
051583	LINE FILTER 27UH	L102				
051585	COIL H-LIN	L802				
051587	DRIVER TRANSFORMER	TR801				
051619	COIL HOR.WIDTH (35-230 UH)	L803				
O51624	FBT 14/15" 10.4 /MICROSLOT	TR802				
051672	FBT 20/21" 10.4 /MICROSLOT	TR802				
O51646	SMPS 14/15" TR/SL	TR101				
051689	SMPS 20/21" TR/SL 002190128	TR101				
053491	SAW FILTER OFWG1962 B/G	FI401				
O56065	SAW FILTER OFWK2950 B/G-D/K	FI401				
O56184	SAW FILTER OFWJ1952 I	FI401				
053498	COIL 1.2UH	L801				
053499	COIL 7UH	L103				
053500	COIL 10UH K	L401				
053505	CERAMIC FILTER SFE5.5MC B/G	FI403				
053506	COIL DEMOD 38.9	FI407				
053508	CERAMIC FILTER TPS5.5MC B/G	FI404				
053515	COIL 15UH K	L1001				
053547	COIL 3UH	L501	L502	L503	L504	
053572	COIL 6.8UH K (A)	L402				
053629	COIL 1UH AXIAL	L202				
053632	COIL 10UH (RAD)	L1002				
054230	FUSE 3.15AT	FU101				
054275	FUSE 1.25A (DELAY)	FU102				
055571	FERRITE 5*2*8	D802	D804	FP101		
056085	CPT SEB A48ECR11X16					
056210	CER.RESONATOR GSB455E	R/C				
O56223	CPT PH A34EAC01X05					
O56750	CPT VC A51EBV13X01					
056861	CRYSTAL 4.433MHZ	Q401				
056946	CHRYSTAL 12MHZ	Q901				
056953	CRYSTAL 6MHZ	Q1001				
056954	CRYSTAL 13.875MHZ	Q1002				
O56992	CERAMIC FILTER SFE 6MC	FI403				
O56994	CERAMIC FILTER TPS 6MC	FI404				
100473	CFR 47R J 1/4W	R116				
101106	CFR 100R J 1/4W	R440				
101181	CFR 180R J 1/4W	R951	R954			
101236	CFR 220R J 1/4W 26MM	R1001				
101274	CFR 270R J 1/4W	R1233				
101343	CFR 330R J 1/4W 26MM	R1017				

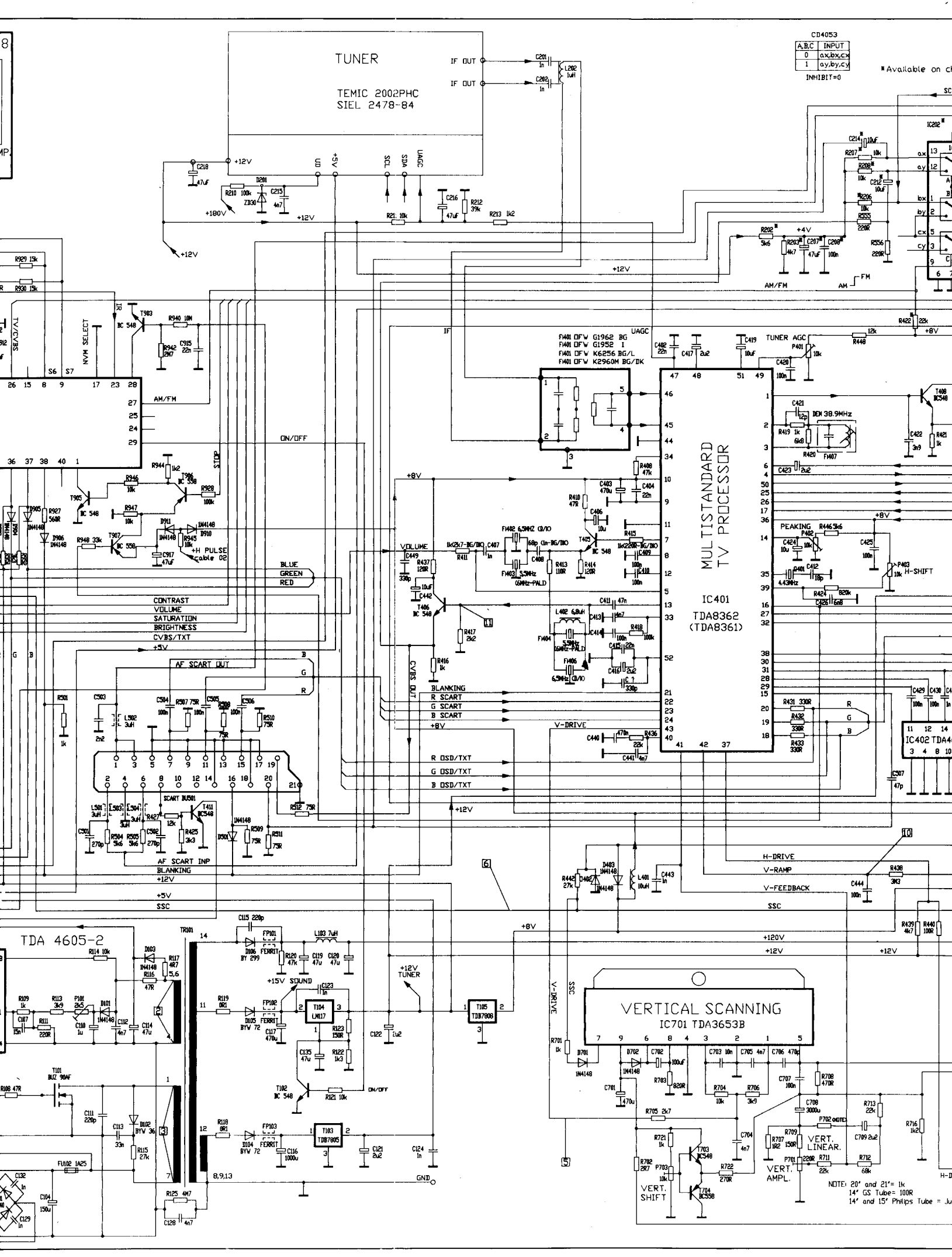
101395	CFR 390R J 1/4W	R1235				
101494	CFR 470R J 1/4W /26MM	R1004				
101562	CFR 560R J 1/4W	R1207	R1209	R1211		
101683	CFR 680R J 1/4W	R1228	R1229	R1230		
101820	CFR 820R J 1/4W	R1231				
102126	CFR 1.2K J 1/4W	R1226	R1227	R1226		
102141	CFR 1K J 1/4W 26MM	R908				
102157	CFR 1.5K J 1/4W	R1201	R1201	R1202	R1203	R1005
102186	CFR 1.8K J 1/4W	R1232	R1234			
102228	CFR 2.2K J 1/4W 26MM	R1010				
102273	CFR 2.7K J 1/4W	R1006	R1007	R1008		
102338	CFR 3.3K J 1/4W	R1003	R1011			
102397	CFR 3.9K J 1/4W	R1204				
102691	CFR 6.8K J 1/4W 26MM	R1012				
103116	CFR 10K J 1/4W	R1009	R1221			
103136	CFR 10K J 1/4W 26MM	R907				
103155	CFR 15K J 1/4W	R1222				
103224	CFR 22K J 1/4W	R1220				
103475	CFR 47K J 1/4W	R1219				
103561	CFR 56K J 1/4W	R1002				
104332	CFR 330K J 1/4W	R1224				
109479	CFR .47R J .4W L=4 MF					
111123	RMO 120R J 2W	R801				
113222	RM 22K K 2W	R1213	R1214	R1215		
113270	RMO 27K J 2W	R115	R210	R115		
113477	RMO 47K J 2W	R1208	R1210	R1212	R104	
113478	RMO 47K J 1.5W	R120				
114101	RM 100K J 1W	R210				
114330	RMO 330K J 1.5W	R107				
114820	RMO 820K J 1.5W	R106				
115226	RMO 2.2M J 2W	R102				
115473	RM 4.7M %1 1W	R125	R941			
121182	RW 180R J 2W	R802				
122109	RM 1K J 0.7W (SAFETY)	R1216	R1217	R1218		
122114	RW 1K J 1.5W (UFLB)	R806				
129109	RW .1R J .75W	R118	R119	R808	R813	R1225
129124	RW 1.2R J 1W	R707				
129275	RW 2.7R J 1.5W (UFLB)	R301	R702			
129486	RW 4.7R J 11W	R807				
129510	RW .51R J .75W	R804				
131250	R-VAR 250R (H)	P701				
132252	R-VAR 2.5K (V)	P1201	P1202	P1203	P1204	P1201
132252	R-VAR 2.5K (V)	P101				
132475	R-VAR 4.7K (V)	P1203	P1204			
133118	R-VAR 10K V(2.5MM)	P401	P402	P403	P703	
140472	CFR 47R J 1/4W /3.2 26MM	R108	R410			
140753	CFR 75R J 1/4W /3.2 26MM	R507	R508	R509	R510	R511
141110	CFR 110R 1/4W /3.2	R413				
141123	CFR 120R J 1/4W /3.2	R414	R437			
141153	CFR 150R J 1/4W/3.2 26MM	R123	R709			
141222	CFR 220R J 1/4W /3.2 26MM	R111	R434			
141273	CFR 270R J 1/4W /3.2	R722				
141332	CFR 330R J 1/4W /3.2	R431	R432	R433	R703	
141472	CFR 470R J 1/4W /3.2 26MM	R708				
141563	CFR 560R J 1/4W /3.2 26MM	R927				
142105	CFR 1K J 1/4W /3.2 26MM	R411	R415	P702	R721	
142105	CFR 1K J 1/4W /3.2 26MM	R109	R416	R419	R421	R501
142123	CFR 1.2K J 1/4W /3.2 26MM	R213	R716	R944		
142124	CFR 1.2K J 1/4W	R1227				
142133	CFR 1.3K J 1/4W /3.2	R122				
142152	CFR 1.5K J 1/4W /3.2 26MM	RK02				

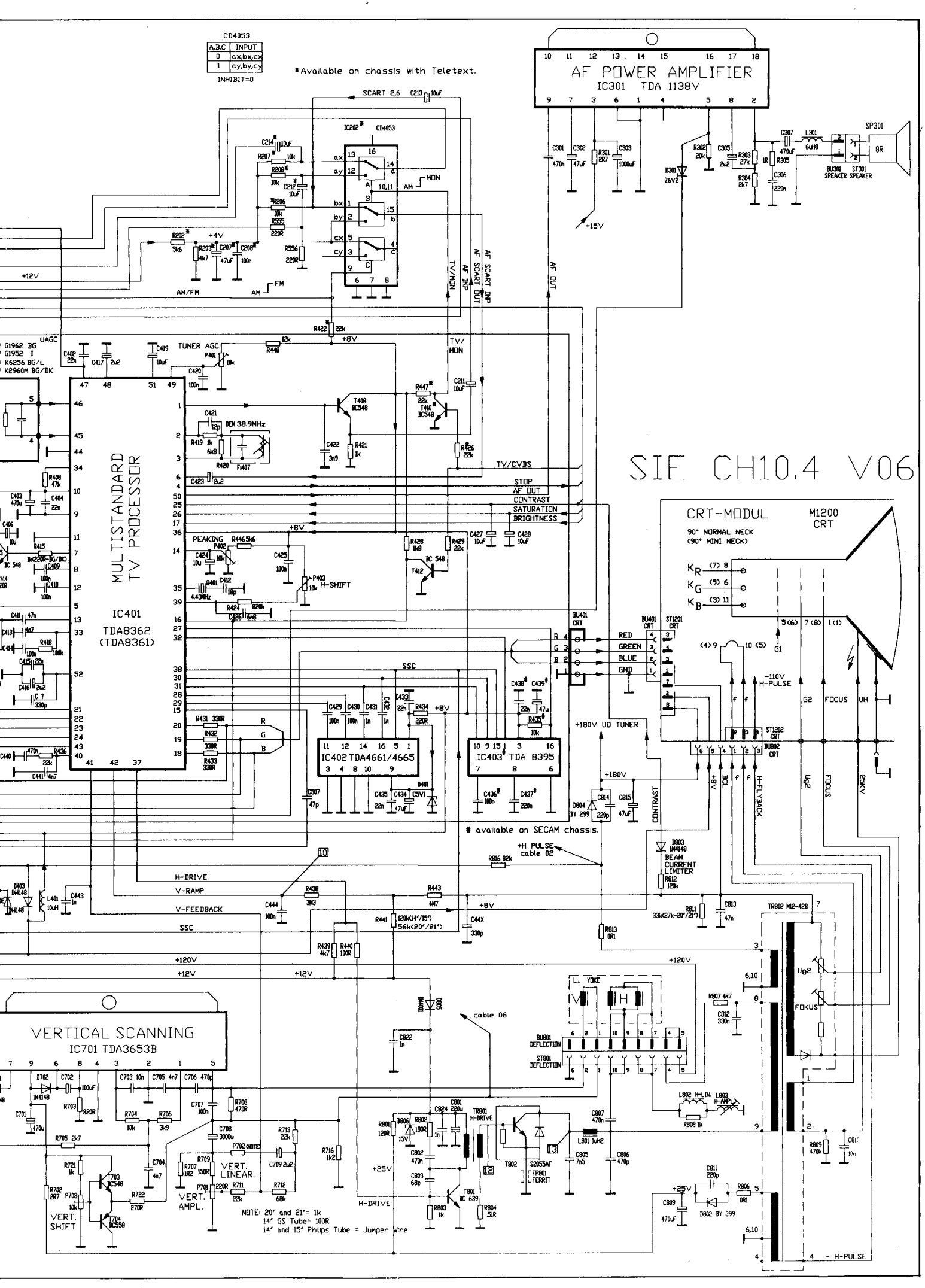
142181	CFR 1.8K J 1/4W /3.2 26MM	R428				
142224	CFR 2.2K J 1/4W /3.2 26MM	R417				
142272	CFR 2.7K J 1/4W /3.2 26MM	R304	R705	R1205	R1206	
142333	CFR 3.3K J 1/4W /3.2 26MM	R423	R423	RK04	R423	RK04
142392	CFR 3.9K J 1/4W /3.2	R113	R706			
142475	CFR 4.7K J 1/4W /3.2 26MM	R203				
142475	CFR 4.7K J 1/4W /3.2 26MM	R909	R911	R914	R917	R919
142514	CFR 5.1K J 1/4W /3.2 26MM	R105				
142563	CFR 5.6K J 1/4W /3.2 26MM	R202	R504	R505	R446	
142682	CFR 6.8K J 1/4W /3.2	R420	R439	R420	R439	RK03
142822	CFR 8.2K J 1/4W /3.2 26MM	R923				
143103	CFR 10K J 1/4W/3.2 26MM	R207	R208	R206	R204	R945
143103	CFR 10K J 1/4W/3.2 26MM	R114	R121	R211	R704	R910
143124	CFR 12K J 1/4W /3.2 26MM	R427				
143153	CFR 15K J 1/4W /3.2	R907	R908	R922	R929	R930
143202	CFR 20K J 1/4W /3.2	R302				
143224	CFR 22K J 1/4W /3.2 26MM	R435	R436	R711	R713	
143224	CFR 22K J 1/4W /3.2 26MM	R426	R422	R447	R429	
143273	CFR 27K J 1/4W /3.2 26MM	R303	R442	R811		
143332	CFR 33K J 1/4W /3.2 26MM	R948				
143393	CFR 39K J 1/4W /3.2 26MM	R212	R921	R212	R921	
143473	CFR 47K J 1/4W /3.2 26MM	R408	R943			
143681	CFR 68K J 1/4W /3.2	R712				
143826	CFR 82K J 1/4W /3.2	R816				
144105	CFR 100K J 1/4W /3.2 26MM	R418	R928			
144122	CFR 120K J 1/4W /3.2 26MM	R812	RK01			
144180	CFR 180K J 1/4W /3.2	R441				
144470	CFR 470K J 1/4W /3.2	R809				
144821	CFR 820K J 1/4W /3.2	R424				
145151	CFR 1.5M J 1/4W /3.2	R1223				
145271	CFR 2.7M J 1/4W /3.2 26MM	R942				
145330	CFR 3.3M J 1/4W /3.2	R438				
146100	CFR 10M J 1/4W/3.2 26MM	R443	R940			
149102	CFR 1R J 1/4W /3.2 26MM	R305				
149473	CFR 4.7W J 1/4W /3.2	R117				
154216	4.7R S234	R103				
154225	DUAL PTC 18R MURATA	R101				
200150	CC 15PF J 63V	C1011	C1013			
200183	CC 18PF J 63V	C412	C1008			
200222	CC 22PF J 100V	C421				
200271	CC 27PF J 63V	C1010				
200331	CC 33PF J 63V	C909	C910			
200473	CC 47PF J 63V	C1202				
200682	CC 68PF J 100V	C408				
200821	CC 82PF J 63V	C1201	C1203			
200821	CC 82PF J 63V	C803	C1201	C1203		
201104	CC 100PF J 50V	C1018				
201221	CC 220PF J 63V	C1003				
201223	CC 220PF 2KV	C115	C811	C814		
201273	CC 270PF J 63V	C1017				
201332	CC 330PF J 63V (R:5)					
201471	CC 470PF 2KV	C806				
201472	CC 470PF K 63V	C706				
201473	CC 470PF J 63V	C1015				
202105	CC 1NF 1KV	C129	C130	C131	C132	
202106	CC 1NF 100V	CK02				
202109	CC 1NF K 63V R:5	C123	C124	C133	C407	C431
202227	CC 2.2NF K 63V	C503				
202481-01	CC 4.7NF 400V AC (SEMKO)	C128				
203222	CC 22NF K 63V R:5	C433	C435	C438		
204106	CC 100NF 63V	C420	C429	C430	C903	C904

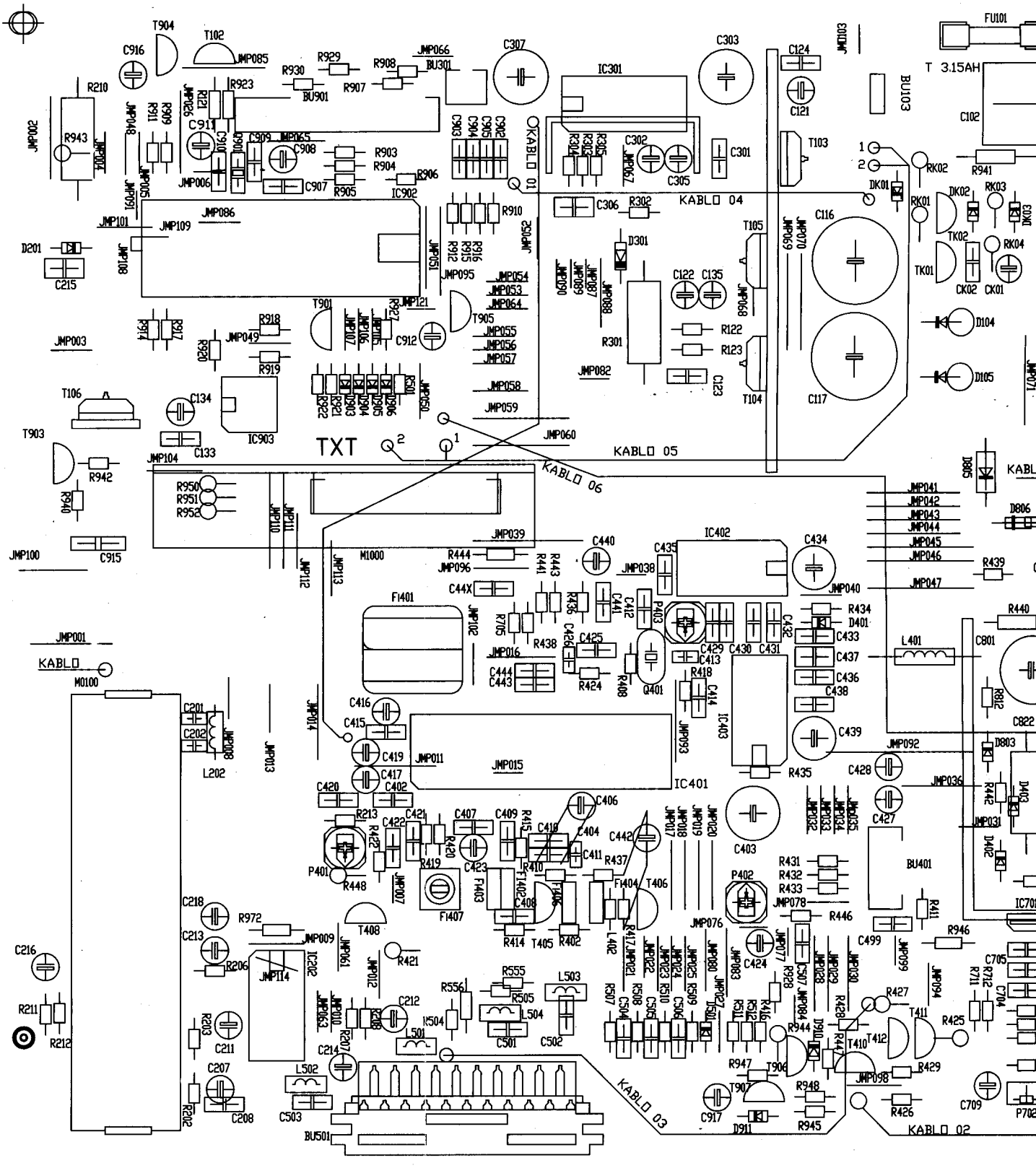
204106	CC 100NF 63V	C208
209390	CC 3.9NF J 63V	C422
213684	C-PEM 68NF 250V	C101
221279	CC 270PF K 50V	C501 C502
232162	EC 100UF 40V	C702
250105	EC 1UF 100V	C110 C906 C1007
250109	EC 1UF 50V 5*4	C709
250470	EC 4.7UF 16V	C1207
251115	EC 10UF 25V	C212 C214 C1006 C406 C442
251115	EC 10UF 25V	C211 C213 C419 C424 C427
251120	EC 10UF 10V	C951
251225	EC 22UF 16V	C1019
251478	EC 47UF 16V	C1022 C1209 C439
251478	EC 47UF 16V	C218 C302 C434 C916 C917
251479	EC 47UF 25V	C114 C135 C216
251480	EC 47UF 250V R:7.5	C119 C120 C815
252112	EC 100UF 16V	CK01
252119	EC 100UF 6.3V 5*11	R/C
252228	EC 220UF 385V	C104
252235	EC 220UF 40V	C801
252476	EC 470UF 25V	C307 C403
252477	EC 470UF 40V	C117 C701 C809
253108	EC 1000UF 25V	C116 C303
253332	EC 3300UF 40V	C708
259223	EC 2.2UF 63V	C121 C122 C134 C305 C416
259478	EC 4.7UF 250V	C1211
271220	C-MFP 220PF 1.6KV	C111
272101	C-PEM 1NF 63V	C201 C202 C1014
272101	C-PEM 1NF 63V	C443 C704 C441
272391	C-PEM 3.9NF K 63V	C106
272471	C-PEM 4.7NF K 63V	C112 C215 C703 C705 C413
272681	C-PEM 6.8NF K 63V	C426 C1216
272910	C-PP 9.1NF J 1.6KV	C805
273102	C-PEM 10NF K 63V	C810 C1012
273110	C-MKP 10NF K 1KV	C1213
273150	C-PEM 15NF K 63V	C107
273222	C-PEM 22NF K 250V	C915
273224	C-PEM 22NF K 63V	C402 C404 C415 C1016 C1020
273331	C-PPM 33NF J 1KV	C113
273471	C-PEM 47NF K 63V	C411 C507 C813 C1005
273474	C-PEM 47NF K 250V	C1212
273681	C-PEM 68NF K 63V	C1002
274104	C-PEM 100NF K 63V	C409 C410 C414 C425 C444
274104	C-PEM 100NF K 63V	C436 C1021 C1024 C1205
274106	C-PEM 100NF K 250V	C1204
274222	C-PEM 220NF K 63V	C105 C306 C437 C1004
274224	C-PEM 220NF 250V	C103
274330	C-PEM 330NF J 250V	C812
274470	C-PEM .47UF J 400V (MPP)	C807
274471	C-PEM 470NF K 63V	C301 C440 C802 C1001
274680	C-PEM 680NF 250V	C102
275101	C-MKT 1UF K 63V	C902
291101	CC-CHIP 100PF J 63V /1206	R/C
292479	CC-CHIP 4.7NF J 63V /1206	R/C
302289	DIODE 1N4148	D1201 D1202 D1203 D1205
302289	DIODE 1N4148	D1001 D1002 D1003 D1004
302289	DIODE 1N4148	D101 D103 D402 D403 D501
302628	DIODE Z. 5V1 26MM	D401 D401 DK01
302772	DIODE Z. 15V 1W	D806
302939	DIODE 1N4002 (DONG SUN	D702 D805
302947	DIODE 1N4004	D1206

303086	DIODE Z. BZX85-C6V2	D301				
303087	DIODE C2540 BRIDGE	GR101				
303147	DIODE BYW36	D102				
303205	DIODE BYW96E	D106	D802	D804		
303771	DIODE ZENER C33	D201				
303942	LED LTL4224 RED					
303991	LED IR SIR563SB3F 23/940	R/C				
400251	TRN BC338-25	R/C				
400337	TRN BC639S	T801				
400338	TRN BF422	T1201	T1203	T1205		
400338	TRN BF422	T1206	T1207	T1208		
400987	TRN BC548	T410	T412	T1001	T1002	
400987	TRN BC548	T102	T405	T406	T408	T411
400989	TRN BC558	T1204	T1208			
400989	TRN BC558	T704	T901	T906	T907	T912
400990	TRN BF869G	T1201	T1202	T1203	T1202	T1204
400991	TRN BUZ90A	T101				
401003	TRN S2055F	T802				
451465	IC SDA2526	IC903				
451513	IC SDA5231	IC1001				
451514	IC SDA5243	IC1002				
451515	IC UPD4364C-15L	IC1003				
451517	IC TDB7805CT T0220CASE	T103	T106			
451518	IC LM317T T0220CASE	T104				
451849	IC TDB7808	T105				
451859	IC CD4053	IC202				
451865	IC TDA1138V	IC301				
451923	IC TDA4605-2	IC101				
451924-03	IC SDA20581-A504	IC902				
451925	IC TDA8362	IC401				
451926	IC TDA4661	IC402				
451927	IC TDA8395	IC403				
451928	IC TDA3653B	IC701				
451996	IR RECEIVER SFH506-38	IC951				
451997	IC KS51810-50 SOP	R/C				
50S310	INSULATER BUZ90 17*12*.15					
526107-AS	SPK.FOST.16R/7W PRJ-C POWER-UP					
571210	HOLDER LED					
571925	PUSH CATCH NWE TYPE					
61D136	TUNER TFK2002PHC	M0100				
639167-AS	DEGAUSSING COIL ASSY 20" PROFILLE					
65H188-02	TX ASSY STD SINGLE FACE 10.4 V3					
67D500-AS	CABLE HARNESS 10P L=400 DY/ST802 10.4 90					
68E187	R/C HAND SET SL COVER FUME 10.3/MN 613	R/C				
68E202	TOP COVER R/C SL COVER FUME M.	R/C				
68E203	BOTTOM COVER R/C SL COVER FUME M.	R/C				
68E204	SLIDING COVER R/C FUME	R/C				
700207	WINDOW FILTER R/C HAND SET SL COVER	R/C				
700303	TERMINAL BATT. BOX(+) SLCOVER R/C	R/C				
700903	RUBBER CONTACT 52*101 22KEY MN 10.3	R/C				
700953	RUBBER CONTACT SMALL 10.3/SIE/ST SL CO	R/C				
703191-01	PCB R/C HANDSET MN	R/C				
73Z165	CRT ASSY (.1R/NS) 10.4 MOD					


LOCAL CONTROL
IC901 SFH506-38
IR PREAMP.
TUNER
TEMIC 2002PHC
SIEL 2478-84
IF OUT
MICROCONTROLLER
IC902 SDA20581-A504
AM/FM
ON/OFF
STOP
BLUE
GREEN
RED
CONTRAST
VOLUME
SATURATION
BRIGHTNESS
+12V
SCL
SDA
CVBS/TXT
AF SCART OUT
AF SCART INP
BLANKING
+5V
SSC
+8V
VTX-MODULE
SDA 5231
SDA 5243 MEMORY ?PD 4364-15L
OR
SDA 5248 MEMORY HYB 514256
IC903
SDA2546
TO TUNER
TDA 4605-2
IC101
+15V SOUND
+12V TUNER
ON/OFF
GND
MAINS


TUNER
TEMIC 2002PHC
SIEL 2478-84
IF OUT
IF OUT
+12V
+5V
SCL
SDA
UAGC
+180V
CD4053
A,B,C | INPUT
0 | ax,bx,cx
1 | ay,by,cy
INHIBIT=0
*Available on ch
MULTISTANDARD
TV PROCESSOR
IC401
TDA8362
(TDA8361)
FW401 OFW G1962 BG
FW401 OFW G1952 I
FW401 OFW K6256 BG/L
FW401 OFW K2960M BG/DK
TUNER AGC
DEM 38.9MHz
FW407
PEAKING
H-SHIFT
4.43MHz
6,5MHz CD/IO
5,5MHz
6MHz-PALD
VOLUME
ON/OFF
STOP
+H PULSE
cable 02
BLUE
GREEN
RED
CONTRAST
VOLUME
SATURATION
BRIGHTNESS
CVBS/TXT
AF SCART OUT
AF SCART INP
SCART BUS01
BLANKING
R SCART
G SCART
B SCART
R OSD/TXT
G OSD/TXT
B OSD/TXT
V-DRIVE
H-DRIVE
V-RAMP
V-FEEDBACK
SSC
AM/FM
AM
FM
TV/CVBS
NVM SELECT
TDA 4605-2
+15V SOUND
+12V TUNER
VERTICAL SCANNING
IC701 TDA3653B
VERT. SHIFT
VERT. AMPL.
VERT. LINEAR.
GND
8,9,13
NOTE: 20" and 21"= 1k
14" GS Tube= 100R
14" and 15" Philips Tube = Ju


CD4053
A,B,C | INPUT
0 | ax,bx,cx
1 | ay,by,cy
INHIBIT=0
*Available on chassis with Teletext.
AF POWER AMPLIFIER
IC301 TDA 1138V
SCART 2,6
IC202 CD4053
AM/FM
AM
FM
+12V
+4V
+15V
SP301
8R
BU301 SPEAKER
ST301 SPEAKER
UAGC
G1962 BG
G1952 I
K6256 BG/L
K2960M BG/DK
TUNER AGC
MULTISTANDARD TV PROCESSOR
IC401
TDA8362
(TDA8361)
DEN 38.9MHz
FM07
TV/CVBS
STOP
AF OUT
CONTRAST
SATURATION
BRIGHTNESS
PEAKING
H-SHIFT
SSC
IC402 TDA4661/4665
IC403 TDA 8395
+180V UD TUNER
+180V
CRT-MODUL
M1200
CRT
90° NORMAL NECK
(90° MINI NECK)
RED
GREEN
BLUE
GND
-110V
H-PULSE
G2
FOCUS
UH
available on SECAM chassis.
+H PULSE
cable 02
BEAM CURRENT LIMITER
H-DRIVE
V-RAMP
V-FEEDBACK
SSC
+120V
+12V
+8V
VERTICAL SCANNING
IC701 TDA3653B
VERT. SHIFT
VERT. AMPL.
VERT. LINEAR.
NOTE: 20" and 21"= 1k
14" GS Tube= 100R
14" and 15" Philips Tube = Jumper Wire
cable 06
L. YOKE
BU801 DEFLECTION
ST801 DEFLECTION
H-DRIVE
+25V
H-PULSE
SIE CH10.4 V06


T 3.15AH
TXT
KABLO 01
KABLO 02
KABLO 03
KABLO 04
KABLO 05
KABLO 06
IC401
IC402
IC403
IC902
IC903
M0100
M1000
BU401
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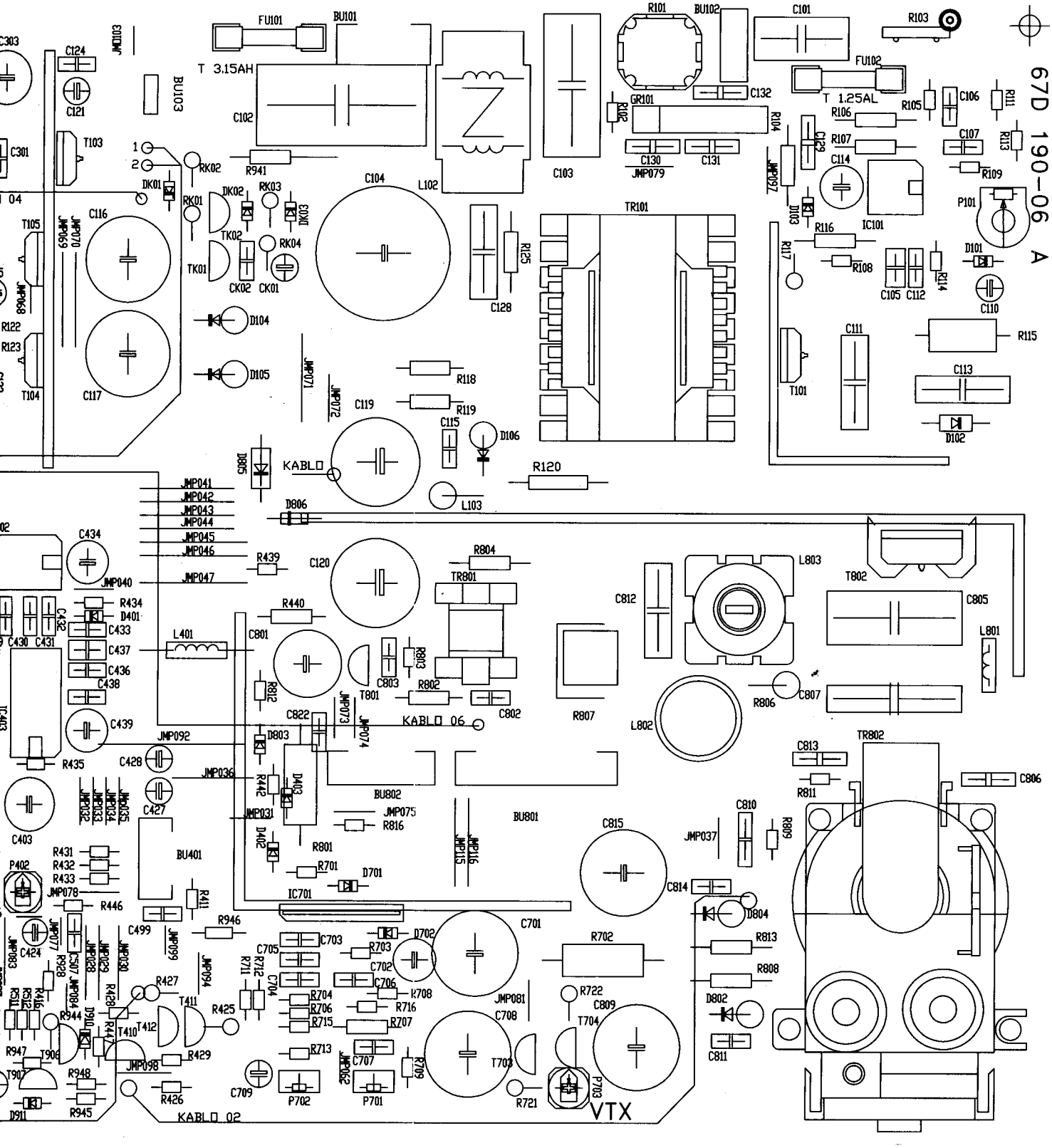
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